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PSYCHOLOGICAL DISTRESS AFTER ABORTION AMONG UNIVERSITY STUDENTS: DEVELOPING AN INTERVENTION

Maureen Curley

Faculty of Medicine, School of Nursing

McGill University, Montreal

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ABSTRACT

Background

A gap exists within healthcare between identifying and treating adverse psychological outcomes to abortion. Meanwhile, 30% of women worldwide experience significant emotional distress after abortion. Specifically, younger women are at the highest risk for developing mental health problems after abortion. No empirical data for interventions to relieve psychological distress after abortion were found.

Goal:

This thesis provides a framework to identify and treat psychological distress after legal, induced, voluntary abortion. It proposes a first of a kind evidence-based and patient-centered intervention to relieve psychological distress after abortion among university students. The thesis proposes a theory and conceptual model to understand negative psychological responses to abortion. Population-specific evidence and preference for services support the theory.

Methods

The United Kingdom Medical Research Guidelines were used to develop the intervention. Two phases of the five-phase method were used. First, the Pre-Clinical Phase developed: (a) the theoretical and (b) evidential basis for target symptoms of the intervention. Next, using these results, the Modeling Phase established (c) the design, (d) patient preferences, and (e) feasibility for delivering the intervention. The thesis is formatted as three manuscripts.

Results

The Pre-Clinical Phase applied psychological stress theory to guide the intervention. It also generated evidence from a cross sectional study of N=151 participants who identified target symptoms. Participants who preferred treatment for distress after abortion demonstrated severe psychological stress (Impact of Event Scores of >26) and moderate perinatal grief (Perinatal Grief scores > 60) focused on the pregnancy and abortion. The Modeling Phase designed the intervention based on patient preferences for a group treatment addressing unanticipated guilt, enhanced coping skills, and education of psychological distress reactions after abortion.

Significance and Conclusions

The thesis is a series of studies that were used to develop a *targeted* and *acceptable* intervention for university students who had an abortion, reported distress afterward, and preferred treatment to relieve it if such treatment was available. The thesis provides a mechanism within nursing to understand, identify, and treat psychological distress after abortion that is population-focused, and currently does not exist. The intervention can be tested for efficacy and replicated on larger samples. Effective interventions after abortion have the potential to reduce psychiatric morbidity and mortality after abortion within a university student population.

Résumé

Découvert

Il existe dans le domaine médical une lacune entre la science et la pratique pour comprendre, identifier et traiter les conséquences psychologiques après un avortement. En effet, 30% des femmes du monde qui ont choisi un avortement subissent des conséquences psychologiques significatives. C'est surtout évident parmi les jeunes femmes que l'on trouve les risques les plus élevés pour ces problèmes psychologiques. Les données empiriques pour les interventions qui adressent ce problème n'ont pas été découvertes.

Objectif

Cette thèse a comme but de fournir une base de connaissance et pratique pour traiter les problèmes psychologiques, qui existent après un avortement. L'intervention proposée, unique en son genre, est basée sur les éléments de preuves recueillis des étudiantes universitaires qui ont éprouvé des effets négatifs après un avortement et qui accepteraient un traitement pour leur désordre. Cette thèse propose une théorie et un modèle pour mieux comprendre les mauvais effets psychologiques après un avortement. L'évidence accumulée et les préférences des clients, concentres sur la population du groupe de contrôle, soutient la thèse.

Méthodes

The United Kingdom Medical Research Guideline a fourni la méthode pour l'élaboration des interventions. Parmi les cinq phases proposés dans ce guide, les deux premiers ont été utilisés: *la phase préclinique* et *la phase modèle*. La phase préclinique développe (a) une théorie pour la détresse après un avortement et (b) les symptômes ciblés pour l'intervention. Avec cette évidence comme base, la deuxième phase a été élaborée : (c) plan de l'intervention ; (d) les préférences du client pour une intervention spécifique et (e) la faisabilité et l'application du traitement.

Résultats

La phase préclinique, a déterminé une théorie du désordre psychologique comme base de l'intervention. En plus, une étude descriptive d'un groupe (N=151) de participants fournit l'évidence des symptômes ciblés. Les participants qui cherchaient un traitement, avaient démontré une sévère détresse psychologique (Impact de Grands Nombres d'Evénement >26 et deuil périnatal modéré >60), spécifique à la grossesse et l'avortement. L'évidence ramassée dans la phase préclinique a été utilisé pour déterminer une intervention appropriée. Parmi ces interventions préférées parmi des clients étaient : le service d'une thérapie en groupe pour la culpabilité non anticipée, le succès des compétences, et l'enseignement sur les effets psychologiques après un avortement.

Signification et conclusion

La thèse actuelle représente une série d'études utilisée pour développer une intervention *ciblée et acceptée* par les étudiants universitaires qui, après avoir subi un avortement, ont éprouvé des conséquences psychologiques négatives et qui cherchaient un traitement médical. Cette thèse pourvoit une base de connaissance cohérente dans la profession d'infirmière à comprendre, identifier, et traiter la détresse psychologique après un avortement. Cette connaissance, concentrée dans la population, n'existe pas encore. L'intervention développée pourrait être examinée pour l'efficacité et répliquée parmi les groupes plus nombreux. Les interventions efficaces, qui réduisent la détresse après un avortement pourraient aussi réduire la portée de morbidité psychiatrique et mortalité après l'avortement dans la population du niveau universitaire.

ACKOWLEDGEMENTS

It has been a distinct privilege to work with the outstanding faculty that contributed to this thesis. In particular, I am deeply grateful to my supervisor, Dr. Celeste Johnston. The constant time, presence, and attention she devoted to this project enabled its fruition. Her commitment to excellence in research has inspired my development as a researcher and professional.

I am also highly indebted to my committee member, Dr. Harold Merskey, who contributed the psychiatric expertise. His enthusiasm, perseverance, and dedication to this project have been critical to its completion. In addition, his experience in breaking new ground within healthcare helped navigate the challenges that occurred. Further, I am grateful for the unparalleled expertise of my third committee member, Dr. Dominique Walker, who guided the biological content of the thesis.

The research would not have been possible without the vision and cooperation of the directors and staff of the student health centers who participated in this novel study. I want to particularly thank Dr. Pierre Paul Tellier, Director of the McGill University Student Health Services, Dr. Jon Porter and Ms. Estelle Maartman-Moe RN, Directors of the Center for Health and Well-Being at the University of Vermont, and Ms. Melanie Drew, N., MS, Director of the Concordia University Student Health Services. I also wish to thank the McGill Student Health Center staff, as well as Dr. Todd Weinman and staff of the UVM Counseling Center all of whom facilitated recruitment and referral for participants of the study.

Most important, I thank the students of McGill, UVM, and Concordia Universities who participated in this study. I am particularly grateful for the trust and confidence of those who shared their pregnancy and abortion experience, and applaud their courage. Many volunteered information about their abortion for the benefit of helping others. My hope is that this work goes forward in their honor.

Finally, I want to acknowledge the financial support provided by the College of Nursing and Health Sciences of the University of Vermont. I have valued being part of such an extraordinary and collegial faculty.

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PREFACE

Since the legalization of induced, voluntary abortion approximately 42 million abortions occur annually making it one of the most frequently preformed procedures worldwide (United Nations, 2002). Women choose abortion to relieve stress and promote well being. Yet, new data find some women experience mental health problems after abortion which challenges current theory and practice. Surprisingly, nursing literature, research, and practice lack attention to psychological responses to abortion.

Cases of psychological distress after abortion sparked the attention of this candidate as a psychiatric staff nurse. Women who experienced significant psychiatric sequelae after abortion were observed to receive no treatment for that issue. During pursuit of a Master's degree, this candidate explored the phenomena of psychological distress after abortion. The state of knowledge was at a preliminary level of theory generating based on descriptive studies. Some characterized distress after abortion as a type of psychological stress reaction. This provided an initial construct to treat women who presented to the candidate's practice in crisis after abortion

Since then, epidemiological data on mental health after abortion has accrued. However, consensus is lacking as to whether the abortion, the unwanted pregnancy, or mental health problems prior to the unwanted pregnancy and abortion contribute to distress after abortion. Unfortunately, *this lack of consensus on the etiology of mental health problems after abortion presents the major barrier to developing interventions to relieve them.* Moreover, the absence of interventions after abortion may be contributing to poor outcomes afterwards. The rapid proliferation of post abortion websites, self-help resources, and peer support groups are independent trends pointing to an unmet consumer demand for services.

In response to this need, this doctoral thesis developed an intervention to relieve psychological distress after abortion. The proposed intervention targets the highest risk population for developing psychological problems after abortion, young women. Further, in an effort to advocate for a new underserved population in healthcare, the thesis proposes a mechanism for providers to understand, identify, and treat psychiatric sequelae after abortion.

MCGILL UNIVERSITY MANUSCRIPT-BASED THESIS

In accordance with the McGill University options for a doctoral thesis, the current thesis adheres to a dissertation-by-manuscript format. The thesis is a collection of three manuscripts for which the candidate has been the primary author. The manuscripts represent a series of three consecutive studies reporting on the development of an intervention.

Each manuscript describes a progressive phase of intervention development. The phases of intervention development provide a logical sequence for the thesis, which is structured according to units, chapters, and manuscripts numbered one through three. In addition, connecting texts are placed between chapters and manuscripts for continuity. The manuscripts presented here are longer than would be when submitted to a journal.

CONTRIBUTIONS OF CO-AUTHORS

The candidate is the primary contributor of the thesis and each manuscript. Dr. Celeste Johnston provided the major contributions for overall supervision of the thesis including the conceptual, analytical, methodological, and editorial direction of the entire thesis including the intervention.

As primary author of the first manuscript, the candidate conducted the initial literature review. This included the conception and scope of the review, selecting and applying the review guidelines, delineating the problem, identifying the inclusion and exclusion criteria, extracting data, synthesizing, classifying, and analyzing evidence, and interpreting findings. Later, as co-author, Dr. Harold Merskey provided editorial, methodological, and psychiatric consultation for the review. Data were reviewed and included by consensus of both authors. The co-author assisted in refining inclusion criteria, editing, and interpreting results and discussion of findings.

As the primary author of the second manuscript, the candidate, guided by Dr. Johnston, conceptualized and designed the study method and protocol. As co-author, Dr. Johnston provided the conceptual, statistical, analytical, and editorial supervision of the study. The candidate designed the questionnaires, developed the study sites, recruited participants, collected and analyzed data, and wrote the findings. Dr. Johnston was the Principal Investigator of record for the McGill University Institutional Review Board for the initial and continuing ethical approval process. In addition as secondary co-author, Dr. Harold Merskey supervised the psychiatric content of the study. This included consultation with instrument selection, inclusion criteria, referral criteria, management adverse events and content for consent forms. Dr. Johnston and Dr. Merskey assisted in obtaining initial ethical approval from the McGill University Institutional Review board. Dr Ashikaga, Professor and Director of the Medical Biostatistics Facility of the College of Medicine at the University of Vermont provided paid statistical consultation for the analyses of the study in manuscript two. Mr. Alan Howard of the University of Vermont provided technical support for the analysis. A paid research assistant entered data for several weeks.

As primary author of the third manuscript, the candidate selected the United Kingdom's Medical Research Council Guidelines to develop the intervention. The theoretical content, evidence, and patient preferences obtained in the study were used to design the intervention. It was then shaped for delivery in nursing and according to psychological stress interventions. Dr. Ashikaga also provided statistical supervision for analyzing and reporting the results of the study in manuscript three.

In addition, the study site approval was obtained from the medical boards of the McGill University Student Health Services and from the University of Vermont Center for Health and Well Being. The candidate also obtained permission to refer participants from Concordia University to the study at the McGill site from the director of the Concordia University Student Health Services.

STATEMENT OF ORIGINALITY

The current thesis is the original work of the candidate. It reports on the development and proposed intervention to treat distress after abortion. The thesis builds on previous work within a Master's Program which identified psychological distress after abortion as an unrecognized health problem. Within the doctoral in nursing program at McGill, the candidate conducted a research initiative of several studies used to develop the intervention.

The systematic literature review was the first review found to apply a standard method to evaluate data on abortion and subsequent mental health. In contrast to other reviews which found that psychological distress after abortion was related to distress prior to abortion (Robinson et al., 2009; American Psychological Association, 2008; Charles et al., 2008), the current review found that psychological distress after abortion may be associated with the abortion itself. No intervention studies were found.

Based on these results, the goal of the thesis was to develop an intervention. Several studies were conducted to establish the theory and evidence for the intervention. The cross sectional study was the first found to: (a) describe psychological distress after abortion among university students, and (b) obtain evidence of target symptoms for an intervention. More than 50% of participants desired assistance for distress after abortion.

The second study was the first found to identify preferences for treatment after abortion specific to younger women. The third manuscript reports on developing an intervention using the United Kingdom's Medical Research Council's Guidelines for Intervention Development. The manuscript proposes an original, evidence-based, and patient-preferred intervention to relieve psychological distress after abortion. The thesis includes a manual-based procedure for delivering the intervention.

CHAPTER ONE
INTRODUCTION

Overview

Emerging evidence on the psychological effects of legal, induced abortion among some sub-populations of women point to an increased risk for anxiety disorders (Bradshaw & Slade, 2003; Cougle, Reardon, & Coleman, 2005; Fergusson, Horwood & Boden, 2008; Mota, Burnett, & Sareen, 2010), stress reactions (Broen, Moun, Bodtker, & Ekeberg, 2005; Rue, Coleman, Rue, & Reardon, 2004), depression (Fergusson, Horwood, & Ridder, 2006; Mota et al., 2010; Pederson, 2008; Reardon & Cougle, 2002; Thorpe, Hartman & Shadigian, 2002), self-destructive tendencies (Houston & Jacobson, 1996), including substance abuse (Mota et al., 2010; Reardon, Coleman & Cougle, 2004), and suicide (Fergusson, Horwood, & Boden, 2008; Gissler, Hemminki, & Lonnqvist, 1996; Morgan, Evans, Peter & Currie, 1997; Mota et al., 2010) when compared to other reproductive events. While many women experience relief after abortion, approximately 30% experience significant psychological sequelae which did not remit over time (Bradshaw and Slade, 2003). Until recently, research focused primarily on women who showed positive emotional adjustment to abortion with no distress (Adler, David, Major, Roth, Russo, & Wyatt, 1992; Cozzarelli, 1993). Only recently is research focusing on the very relevant area of women who experience more severe and persistent distress.

In particular, young women aged 20-24 years are among those who experience adverse psychological outcomes to abortion. This age group also has the highest rate of abortion as well as the highest rate of repeated abortions (United Nations, 2002). Repeated abortions can occur as a means of prophylaxis or as re-enactments of unresolved distress from a previous abortion. The World Health Organization recognizes the problem of repeated pregnancy and abortion within this age group and the need for effective interventions in order to reduce repeated abortions (World Health Organization, 2003a). Preliminary reports indicated that interventions aimed at relieving psychological distress after abortion can be effective. However, it is not known what

interventions are most effective as no studies were found. Moreover, no data were identified for younger women. This gap remains an increasingly unmet need within healthcare. Women who are distressed after abortion are fast becoming an underserved and marginalized population within healthcare. The rapid proliferation of international post abortion self-help groups, resources, and websites over the past decade lends evidence to this new trend.

Early interventions after abortion can reduce distress, can prevent repeated unwanted pregnancy and prevent repeated abortions. The long-term objective of this study was to optimize services to reduce psychological distress after abortion within a vulnerable population, college-aged women. The short-term objectives of this study were four-fold: (a) to identify the nature, severity, and determinants of psychological distress after abortion; (b) to identify which determinants can be modified by interventions; (c) to identify the content, timing, and format of an intervention to relieve psychological distress after abortion based on the preferences of the target population and (d) to evaluate the feasibility and efficacy of delivering an intervention within the contemporary nursing.

Significance

Due to the high incidence of worldwide abortion, evidence indicates that a substantial number of young women experience significant mental health problems afterwards. Of concern is that when using an estimate of 30% and adjusting for repeated abortion rates, a minimum of 30,000 women per year in Canada and almost 300,000 women per year in the United States are at risk for negative abortion sequelae (Health Canada, 2000; Morbidity & Mortality Weekly Report, 2002). Since the rates of post abortion psychological distress exceed the rates of postpartum psychological distress, greater attention needs to be paid to this unrecognized public health problem.

The thesis contributes new knowledge based on several accounts. First, the thesis provides evidence of target symptoms of psychological distress after abortion among one of the population at highest risk for adverse outcomes. Second, the thesis

developed and proposed a pilot intervention focused on the needs of this patient population. If efficacious, the intervention offers an initial step of treatment currently not offered within healthcare. The intervention may be replicable to other university health services or settings. Finally, the thesis recommends exploratory inquiry into the neurobiological responses of stress and reproductive hormones associated with adverse abortion outcomes

Purpose

The thesis proposes a patient-centered intervention (PCI) (Lauver, Ward, Heidrich, Keller, et al., 2002) to improve psychological outcomes after abortion among university students. Patient-centered interventions in nursing are distinguished as interventions that are: (a) responsive to the needs of specific patient populations (b) guided by a well-defined conceptual framework that link interventions with patient outcomes (Given, 2004); (c) are efficacious and (d) have clinical utility (Brown, 2002). Interventions are patient responsive when they maximize efficacy. Brown (2002) suggests improving efficacy by evaluating patient groups that would be most likely to benefit from the intervention.

The proposed intervention meets these objectives by *targeting* symptoms and developing a service that is *acceptable* to university students after abortion. The intervention was developed to be offered within university student health services. Subsequent phases of intervention development include testing the model for efficacy and replicating it among university student health centers.

Organization of Thesis

This thesis is organized as a series of three sequential manuscripts. Each manuscript reports on the progressive development of the intervention. The progression of intervention development follows the Medical Research Council (MRC) Guidelines for Intervention Development from the United Kingdom (Medical Research Council, 2000). The MRC guidelines use a phase-oriented approach to intervention development. The MRC phases of intervention development provide the framework for the progression of the manuscripts and organization of the thesis.

Chapter I includes the introduction, overview, significance and purpose of the thesis. This included preliminary information on abortion, the incidence of abortion worldwide, and the state of the science to orient the reader to the scope of the thesis.

Chapter II describes the Medical Research Council Guidelines for Intervention Development. The description includes the background, rationale, and step-wise method of phases of intervention development. The thesis included the first two phases of intervention development, the Pre-Clinical Phase and the Modeling Phase. These sequential phases provided a natural structure for the organization of the thesis.

Chapter III describes The Pre-Clinical Phase of Intervention Development. This chapter is presented in two parts. Part I included the theoretical basis for developing the intervention, and began with a review of the literature. The Manuscript One reports on "A Systematic Review of Psychological Distress after Abortion". The literature review applied the Meta-Analysis of Observational Studies in Epidemiology (MOOSE) (Stroupe, Berlin, Morton, Olkin, Williamson, Rennie et al., 2008) method to examine evidence on the incidence, severity, and significance of psychological distress after abortion for a sub-group of women worldwide. The review focused on studies of mental health problems after abortion.

Part I also provides a detailed description of the theory used to frame the intervention. The thesis proposes a bio-psychosocial framework, a theory of psychological stress, and conceptual model to explain psychological distress after abortion.

Part II of Chapter III describes the empirical basis for developing the intervention. This included the main study of the thesis and reports on Manuscript Two "Characteristics of Psychological Distress after Abortion among University Students". The study generated evidence for developing the intervention.

Based on these results, the intervention was designed in the Modeling Phase. Chapter IV describes The Modeling Phase of Intervention Development. Chapter IV includes Manuscript Three "Psychological Distress after Abortion: Developing an Intervention for University Students." Manuscript Three has two parts. Part I reported on the method used for designing the intervention. Part II reported on the feasibility and delivery of the intervention within nursing practice. Manuscript Three also includes a manual-based procedure for conducting the intervention.

Finally, Chapter V discussed the limitations, conclusions, ethical considerations, and implication for practice of the thesis.

CHAPTER TWO
GUIDELINES FOR DEVELOPING THE INTERVENTION

Overview

The United Kingdom Medical Research Council (MRC) Guidelines for the Development and Evaluation of Complex Interventions provided the primary framework for developing the proposed intervention. Because the body of knowledge on psychological responses to abortion has been developed within the disciplines of psychology and psychiatry, and whereas most psychological interventions are delivered by mental health professionals, the thesis used a medical guideline to develop the intervention. The second guideline was used to shape a nursing intervention. The MRC guideline consisted of five sequential phases of intervention development. This chapter describes the rationale for selecting the MRC guideline, the five phases of the method, the application of the phases to the current thesis, and the contribution of the secondary framework in the development of the proposed intervention.

The MRC guideline was selected for several reasons as the best framework to guide the development of an intervention which would have the highest probability of both *efficacy* for relief of target symptoms and *utility* for use among the target population. These reasons include but are not limited to the following. First, the guideline used a phase-oriented approach which was conducive to creating an original intervention that was constructed from the ground up. In addition, the guideline had been successfully used to develop nursing interventions, with modifications made to the feasibility of delivering interventions within current nursing practice (Whittemore and Gray, 2002). Specifically, the MRC guideline included developing a complex intervention which addressed the multiple challenges inherent in developing a treatment regime that provided an emotional and behavioral focus, targeted a hard to reach and high-risk population, and addressed the controversial subject matter of abortion. Lastly, the MRC based intervention development on the generation, application, and accumulation of evidence.

The MRC guideline recommends that interventions be developed according to a progressive strengthening of evidence. This includes: (a) using high quality data, (b) applying relevant theory, (c) pilot testing according to what is unknown, (d) evaluating results, and then (e) implementing the intervention. The MRC framework proposes five consecutive phases for intervention development. The five phases include the first phase, the Pre-Clinical Phase (Theory Phase) which determines a theoretical and empirical basis for an intervention. The second phase, the Phase I (Modeling Phase), identifies the structure of an intervention including applying evidence for how the therapeutic components create change that positively impact outcomes. The third phase, Phase II (Exploratory Trial Phase), pilot-tests an intervention to differentiate essential factors from modifiable factors of change for replication purposes, as well as for feasibility purposes to compare with other interventions. The fourth phase, Phase III (Randomized Controlled Trial Phase) a randomized controlled trial, compares and develops an intervention, which is theoretically and methodologically sound, and able to be replicated, with a comparable alternative intervention. Phase IV (Long Term Implementation Phase) focuses on delivering an intervention over the long term, addressing issues such as the fidelity of intervention replication by providers, and achieving consistent results from varied patient populations (MRC 2000).

The MRC Guidelines Applied to the Current Study

The Pre-Clinical Phase and the Modeling Phase of the MRC guidelines for intervention development were used to develop the proposed intervention. The Pre-Clinical Phase determined the theory and evidence to be used to develop the intervention. Given that psychological distress after abortion is not well recognized, this phase provided a detailed description of the theoretical basis for the intervention. Then, the Pre-Clinical Phase included developing the empirical basis for the intervention by obtaining evidence from the patient population who reported distress after an abortion and who would have desired services, if such services were available. The study asked: What are the characteristics of psychological distress after abortion among university students? What types of patient groups desired and could benefit from a post abortion psychological intervention? Based on these results, the Modeling Phase study aimed to develop an intervention. Phases II, III, and IV of the MRC framework were not developed for the proposed intervention and were not part of the current study.

CHAPTER THREE
THE PRE-CLINICAL PHASE OF INTERVENTION DEVELOPMENT

Part I: The Theoretical Basis for the Intervention

The Pre-Clinical Phase included first, reviewing the literature in order to determine what is known about psychological distress after abortion. The review of the literature found that interventions were needed. In addition, the literature review guided the selection of relevant theories to understand psychological distress after abortion. The Pre-Clinical Phase included two parts. Part I determined a theory to guide developing the intervention. Part II determined evidence from the target population which provided support for the theory.

Preface to Manuscript One

The Manuscript One reports on a systematic review of the literature which examined the worldwide incidence and severity of mental health problems after abortion. The review identified the epidemiological evidence on abortion and subsequent mental health to determine the need for empirical data on interventions after abortion.

Much of the controversy surrounding research as to whether abortion improves or impairs women's mental health comes from varied methodological approaches to reviewing the evidence. This has resulted in inconclusive data on the impact of abortion on subsequent mental health. As a result, this review is distinct from others in an effort to maximize objectivity through the use of standard evaluation criteria. This review applied the standard guidelines for evaluating studies on abortion and mental health using the Met-analysis Of Observational Studies in Epidemiology (MOOSE). We are aware of no similar review which has used objective methods for evaluation.

While recognizing the full range of women's psychological responses to abortion, this review identified only clinically significant responses of psychological distress after abortion. The definition of abortion applied to legal, induced, and voluntary termination of pregnancy. In addition, the definitions for severe mental health problems are further described in the manuscript. Finally, the review found evidence to support the development of the proposed intervention.

MANUSCRIPT ONE

A Systematic Review of Psychological Distress after Abortion

Maureen L. Curley, MS, APRN, B.C., PhD (Candidate)
Doctoral Candidate,
McGill University, Montreal, QUE

Harold Merskey, DM, F. R.C. P., F.R.C.P.C., F. R.C. Psych.
Professor Emeritus of Psychiatry
University of Western Ontario

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ABSTRACT

Background

Current information suggests there is a sub-population of women worldwide who experience significant psychological distress after abortion. Political and professional barriers limit knowledge of variations in responses to abortion.

Objective

The aim was to review the epidemiological data on psychological distress after abortion and discuss the implications for clinical practice.

Methods

The methods used were a systematic meta-analytical evaluation using MOOSE Guidelines. Studies were extracted from MEDLINE, PUBMED, PSYCHINFO, PILOTS, CINAHL, BIOSIS, the Cochrane Collaboration, Web of Science, reference lists, and annotated bibliographies. United Nations data on abortion and professional practice guidelines were also examined.

Results

More than 30% of women experience clinically significant psychological sequelae after abortion. Most practice guidelines reflect a consensus rather than an evidence-based approach.

Conclusions

Psychological distress after abortion is a poorly recognized problem among some vulnerable populations. The potential relationship between abortion and suicide requires further attention. ICD-10 and DSM-IV coding of post-natal psychiatric data may need revision.

Introduction

Accruing data adds to the debate over whether abortion contributes to mental health problems afterwards. Some researchers conclude that evidence associating adverse psychiatric outcomes as the result of abortion is lacking and may be ideologically driven (Charles, Polis, Sridhara & Blum, 2008; Steinberg & Jordan, 2009). Others conclude that abortion increases psychiatric risks for some women and recommend follow up psychological services after abortion (Fergusson, Horwood, & Boden, 2008; Lancet, 2008).

While many women report relief after abortion, it is known that some women report psychological distress that does not remit over time (Ekblad, 1955). Until recently, research on the psychological responses to abortion focused on women who experienced no (Adler, David, Major, Roth & Russo, 1992; Cozzarelli, 1993), minimal (Major, Cozzarelli, Cooper, Zubek, Wilhite & Granzow, 2000), or temporary psychological distress (Bradshaw and Slade 2003). Little research focused on those who experienced more severe distress. Emerging evidence indicates a sub-population of women worldwide experience higher rates of accidental deaths (Gissler, Berg, Bouvier-Colle & Buekens, 2005; Gissler et al., 2004), suicide **(**Fergusson, Horwood & Ridder, 2006; Gissler, Hemminiki & Lonnqvist, 1996; Morgan, Evans, Peter, & Currie, 1997; Mota, Burnett & Sareen, 2010), stress disorders (Broen, Moun, Bodtker & Ekeberg, 2005; Mulfel, Speckhard, & Sivaha, 2002; Rue, Coleman, Rue & Reardon, 2004), depression (Fergusson et al., 2006; Dingle and Alati, 2008; Pederson, 2008; Reardon & Cougle, 2002), anxiety (Fergusson et al., 2006; Cougle, Reardon & Coleman, 2005), psychiatric hospitalizations (Reardon, Cougle, Rue, Shuping, Coleman, & Ney, 2003), violence (Steinberg & Russo, 2008; Taft & Watson, 2008) and overall mental health problems (Fergusson et al., 2008; Mota et al., 2010) after abortion when compared to other pregnancy outcomes. As a result, several professional associations worldwide have recommended further analyzing data on the impact of abortion on mental health and informing women of these risks (Royal College of Psychiatrists, 2008), as well as have revised abortion practice guidelines (Royal College of Obstetricians & Gynecologists, 2004).

Yet, recent reviews evaluated the evidence on abortion and subsequent mental health and found no difference between outcomes after abortion and outcomes after delivery (Charles et al., 2008), no risk for adverse psychological reactions for a first-trimester abortion for adult women (American Psychological Association, 2008), and that mental health problems after abortion emerge from mental health problems before the abortion, or from the unwanted pregnancy, not the abortion (Mota et al., 2010; Robinson, Stotland, Russo, Lang, & Occhiogrosso, 2009). Several reviews found consensus in studies that observed an increase in psychiatric sequelae after abortion due to methodological limitations, and concluded that the best controlled study found women who aborted an unwanted pregnancy had fewer mental health problems than women who were denied abortion for an unwanted pregnancy (Gilchrist, Hannaford, Frank, & Kay, 1995).

Since then, however, new data based on more rigorous methodology (Fergusson et al., 2008) raises questions as to the validity of these reviews finding that having an abortion was independently associated with an increase in mental health risks when compared to other reproductive events. Whether psychological distress after abortion is attributed to the abortion, to the unintended pregnancy (Adler, David, Major, Roth, Russo & Wyatt, 1990; Belsey Greer, Lewis, & Beard, 1977), to circumstances surrounding both (Fergusson et al., 2006), or to pre-existing mental health problems (Mota et al., 2010; Robinson et al., 2009) remains undetermined. Moreover, varied views on abortion influence methodological approaches to evaluating abortion outcomes, yielding inconsistent results (Fergusson et al., 2008; Gilchrist et al., 1995; Steinberg and Russo, 2008). Currently, the data remain inconclusive and controversial.

Whereas 42 million abortions occur annually worldwide (United Nations, 2007), women who are distressed after abortion account for a large medically neglected population, and may pose a new global health problem (Hoedltke, 2004; Speckhard and Rue, 1992). In view of the conflicting reports after termination of pregnancy, we asked: (a) what is the incidence and nature of psychological distress after abortion? and (b) Does a history of induced abortion increase the risks for suicide, depression, or anxiety as compared to other pregnancy outcomes?

Ideally, a systematic review of well-designed epidemiological studies of outcome after abortion or delivery among women experiencing an unintended pregnancy would answer these questions. Accordingly, similar cohorts would be prospectively followed from birth to first unintended pregnancy, evaluated on the psychological impact of the pregnancy, randomized to an abortion or delivery group, and followed for immediate and latent psychiatric sequelae across the lifespan. Methodological **c**onstraints such as the inability to completely control confounders (Fergusson et al., 2006) both before and after abortion, as well as the inability to control for influential factors surrounding the pregnancy and abortion inhibit such comparisons. Further, because of access to abortion worldwide, most unwanted pregnancies end in abortion. Thus, the prospects of following the mental health outcomes of large cohorts of women who deliver unwanted pregnancies limit such comparisons.

For this review, psychological distress after abortion was conceptualized as a type of perinatal grief (Angelo, 1995; Burke and Reardon, 2002; Ney, 1994; Peppers, 1989; Williams, 2000) and psychological stress reaction (Broen et al., 2005; Mulfel et al., 2002; Rue et al., 2004). Similar to other types of psychological stress and grief reactions, affective, anxiety, and behavioral disorders can emerge within a range of severity. Specifically, we examined the most severe psychological outcomes after abortion resulting in psychiatric morbidity or mortality. Within this scope, we included current evidence on short and long term psychological distress responses to abortion.

Incidence of Psychological Distress After Abortion Worldwide

Approximately 20% of pregnancies worldwide ended in induced abortion. About 30-48% of these were repeated abortions, mostly in North America and Russia. Women aged 20 to 24 years have the highest rates of abortion and repeated abortion (Alan Guttmacher Institute, 2009). Rates of abortion vary among countries according to their abortion policies. See Table I-1 Incidence of Abortion Worldwide. Health Canada (2000) and Cassidy and Gentles (2002, 2003) claimed that adverse outcomes to abortion are underreported**.** Estimates of distress vary from earlier rates of 10% (Adler et al.,

1992; Adler, 1989) to current rates of 20% (Major et al., 2000) for depression, 40% for anxiety (Bradshaw and Slade, 2003), to 40% (Mulfel et al., 2003) and 50% (Lodle, McGettigan & Bucy, 1985) for stress reactions, and most recently over 30 % for all psychiatric disorders (Fergusson et al., 2008). United Nations data conclude that women under 25 years experience the highest rates of psychological distress after abortion (United Nation, 2007). Based on 42 million abortions annually (United Nations, 2007), and adjusting for repeated abortions, a low estimate of 30% represents over nine million women per year worldwide who potentially experience significant psychological distress after abortion. This is twice as high as the 10-15% estimate (O'Hara and Swain, 1996) of women worldwide who experience postpartum disorders and who receive substantial attention within healthcare

Methods

Search Strategies

The search was conducted in 2009 and updated through July 2010. The Guidelines for Meta-Analyses and Systematic Review of Observational Studies in Epidemiology, (MOOSE) (Stroup, Berlin, Morton, Olkin, Williamson et al., 2000) were used. We examined studies worldwide from 1955 to the present that identify psychological stress reactions to legal, induced voluntary abortion. "Stress reactions" include anxiety, depressive, and post- traumatic stress disorders, and suicidal ideation and attempts. We searched the CINAHL, BIOSIS, PUBMED, MEDLINE, PSYCHINFO, PILOTS, Cochrane Collaboration, and Web of Science databases and annotated bibliographies for reports of psychological distress after abortion. Published and unpublished studies, reference lists, electronic searches using the OVID Technologies software and hand searches were included. Search strategies began as broad as possible in order to minimize bias associated with publication, funding, or geographical location. Medical Subject Headings (MeSH) terms such as mood and

mental disorders, behavioral disorders, self-injurious symptoms, as well as types of study designs including prospective studies, cohort studies, longitudinal studies, and other designs were used and expanded. The expanded terms were combined with "induced abortion" and "psychology". Text words for abortion such as pregnancy, adolescent pregnancy were used, as well as other descriptors for mental health such as grief, stress, emotional trauma, adjustment, and attachment behavior

This review had two primary aims which determined the inclusion criteria. First, the review aimed to assess the impact of abortion on the most severe mental health outcomes. Second, because earlier studies of distress after abortion have had methodological limitations, the review aimed to include studies with valid results. Therefore, studies were selected on the following inclusion criteria: 1). studies with methodological designs that controlled for external or complicating events that would confound results, 2). studies that had sufficient samples sizes of at least one hundred subjects, 3). studies that used objective outcome measures in order to minimize bias, and 4). studies which assessed for severe psychological outcome as this has the most significant clinical and public health implications. A minimum of one hundred subjects was thought to provide sufficient power to detect a 10% incidence of adverse outcomes, and was consistent with other similar reviews (Charles et al., 2008; Thorp, Hartman, & Shadigian, 2002). Studies with samples of one hundred or more subjects that met the full criteria were included. Exclusion criteria were: (a) studies comparing reactions between types of abortion, (b). studies of illegal, coerced, or spontaneous abortion as well as studies of abortion for fetal anomalies, missed abortion, and pregnancy failure, (c) studies evaluating psychosocial factors related to abortion such as stigma, personal coping, self-esteem and partner relationship, and (d) studies with poor methodology such as those with more than 60% attrition rates or inadequate time frames to assess a stress response such as several weeks post abortion. Non-English abstracts of studies were reviewed for translation if necessary, but none met the sample size criteria. Abstracts and unpublished studies were reviewed and full text articles were obtained if eligible. No authors were contacted. Professional practice guidelines from North America and the European Union were obtained from the National Guideline

Clearinghouse (National Guideline Clearinghouse, 2010), and reviewed for obstetrical and psychological safety.

Study Selection and Data Extraction

The first author reviewed and extracted data. Inclusion criteria were determined by both authors. Studies were examined according to hierarchical strength of evidence (Guyatt and Rennie, 2002). Guyatt, Haynes, Jarschel, Cook et al. (2000) grade outcome according to seven levels of evidence. We used a modified rating of Guyatt (Melnyk and Fineout-Overholt, 2005) which expanded the hierarchy to include descriptive studies and professional practice guidelines, which is more appropriate for psychological as well as epidemiological data. The hierarchy ranges from Levels I through VII, from the most to least rigorous outcomes. Level I include systematic reviews of randomized controlled trials (RCT). Level II includes at least one well-designed RCT. Level III includes well-designed controlled trials without randomization. Level IV includes systematic reviews of non-experimental studies. Level V includes well-designed descriptive, correlation and case-controlled studies. Level VI includes descriptive or qualitative studies. Finally, Level VII includes expert opinions and professional practice guidelines. Because this review evaluated the incidence and prevalence of psychological distress after abortion, no Level I or II intervention studies were included. Therefore, our evaluation criteria were applied only to Levels III to VII. Confounders were controlled by sample restriction, measurement and comprehensiveness of variables that could influence abortion outcome, and length of time prior to the abortion. Assessment of study heterogeneity included ranges in age, marital status, gestational age of pregnancy, and psychological outcome of samples. Finally, we examined the predictive value of unintended pregnancy on psychological outcome after abortion.

Data Synthesis

Rates of suicide**,** death, depression, and anxiety disorders after abortion were our outcomes of interest. We aimed for objective measures such as maternal mortality rates, psychiatric hospitalization rates, and diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision (American Psychiatric Association, 2000) and the International Classification of Mental and Behavioral Disorders, Tenth Edition (World Health Organization, 1993) to avoid interpretation bias. For data that were not reported as odds ratios, odds ratio analysis was performed using the Peto Odds Ratio Calculation for unmatched cases and controls. We were also interested in characteristics of populations that might be more vulnerable to risks of mental health problems after abortion.

Results

One thousand three hundred and fifty (N=1350) English and non-English studies were found using electronic, and hand **s**earch strategies. Of these, N=143 studies were selected for potential inclusion. Then, after examining and excluding N= 105 studies of abortion for psychosocial reasons, missed abortion, inadequate sample sizes, etc., a final sample was retained of N=38 studies. See Figure I-1. Eligibility of Studies for Inclusion in the MOOSE analyses. We analyzed psychiatric morbidity in all reported studies. Based on the highest level of evidence available, adverse abortion sequelae rates range from more than one (Odds Ratio = 1.34) (Cougle et al., 2005**)** to almost 6 times higher (Odds Ratio = 5.9) (Gissler et al., 1996) when compared to sequelae after delivery among some populations. These outcomes, however, were limited by comparing non-equivalent groups of women who aborted a pregnancy with women who delivered a pregnancy. Next, outcomes were classified according to intended pregnancy versus unintended pregnancy. These findings showed that the incidence of adverse sequelae

after abortion in some studies was considerably less but still significant ranging from over 30% (Odds Ratio =1.34) (Cougle et al., 2005) to 65% higher after abortion (Odds Ratio = 1.65) (Cougle, Reardon, & Coleman, 2003). Finally, when adjusted for confounders that have been thus far known to contribute to distress after abortion, one study found that women who had experienced abortion had a small but distinct increase in the attributable risk to abortion for all types of psychiatric and substance disorders (1.5 to 5.5) (Fergusson et al., 2008). Another study found similar results for higher overall mental health, suicide and substance use (AOR= 1.75 to 4.99) (Mota et al., 2010). Three studies found no differences in adverse outcome after abortion when compared to other pregnancy events for overall mental health problems (Charles et al., 2008), anxiety (OR= 0.84) (Steinberg and Russo, 2008) or depression (OR= 1.19) (Schmiege and Russo, 2005).

Table I-2 Studies of Psychological Distress after Abortion According to Levels of Evidence presents studies included in the review. No Level I or II studies were found. Seven Level III studies, two Level IV, and thirteen Level V studies were found. Level III studies include large population-based samples using mainly prospective longitudinal designs from birth to ten years and beyond the target pregnancy. Six out of seven Level III studies, including five prospective and one retrospective study, found higher rates of depression, anxiety, suicide, and adverse mental health reactions after pregnancy resolved by abortion when compared to pregnancy resolved by delivery for some women. Whether the abortion itself, the unwanted pregnancy, factors that are antecedent or consequential to the pregnancy or abortion, or the cumulative impact of all these factors, contribute to poor mental health after abortion is not yet clear.

Level III Evidence

In the second of three studies, Fergusson et al. (2008) addressed the limitations of other similar studies, including their own earlier work. Methodological limitations associated with studying abortion cited by these authors included: (a) the lack of control for confounders both prior to and surrounding the target pregnancy and abortion thus threatening internal validity, (b) the lack of relevant comparison groups, and (c) the problem of under-reporting of abortion. First, using the same birth cohort, the authors followed subjects after the first pregnancy event for fifteen years forward. While the authors did not justify the basis of a fifteen year follow up, it spanned a time frame sufficient for the emergence of most types of stress disorders. Second, they analyzed adverse mental health outcomes among relevant comparison groups including whether the pregnancy was wanted or unwanted. The groups included: those who aborted a pregnancy (unwanted pregnancy), those who experienced a pregnancy loss (wanted pregnancy), those who delivered a pregnancy with no adverse reaction (wanted pregnancy), and those who delivered a pregnancy with an adverse reaction (unwanted pregnancy). Third, the authors controlled for an extensive number of confounders that thus far have been identified as known to influence abortion outcomes, including prior mental health, family factors, history of adverse events, psychological trauma, and behavioral factors. This strategy provided one of the first attempts to comprehensively identify and control for pre-existing factors extending from birth to a target abortion that may potentially contribute to adverse psychological outcomes after abortion. Fourth, the study reported a 10% rate of concealing abortion, the lowest rate reported to date. After adjusting for more than 30 confounders, Fergusson et al found that having an abortion was associated with a small but distinct increase in the risk for psychiatric disorders (1.5 to 5.5%). Further, when abortion outcomes were compared to other pregnancy outcomes, it resulted in a rate of psychiatric and substance abuse disorders 37% higher than other pregnancy outcomes (1.37; 95%; CI 1.16-1.62). Finally, the authors assessed these results across a range of developmental points and mental health outcomes and found that the rates were consistent.

They concluded that abortion may independently contribute to a slight but causal increase in adverse mental health outcomes afterwards. The study improved upon the first study by Fergusson et al. (2006) from the same cohort which found higher rates of depression anxiety and suicide after abortion compared to delivery and controls. In the third study, Fergusson et al. (2009) obtained retrospective data from the same cohort and comparison groups at thirty years of age. A composite score of mental health problems that included the number of positive and negative reactions after each pregnancy, self-report of suicidal behavior, and the incidence of DSM-IV diagnoses were used to measure outcome. The authors found that mental health problems subsequent to abortion were 1.4 (95% CI 1.20-1.70) to 1.8 ((95& CI 1.19- 2.75) times higher when compared to subjects with no abortion.

The latter two studies by Fergusson et al. sharply contrast with other studies which conclude prior mental health, not the abortion, provide the greatest contribution to adverse mental health outcomes afterwards. Limitations to the third study by Fergusson included the use of retrospective data for evaluating reactions to each pregnancy as well as the use of self-report for instances of suicidal behavior. These limitations may have resulted in recall bias. While the generalizability of these findings may be limited to countries like New Zealand that restrict access to abortion, the studies nevertheless provide the highest quality preliminary evidence thus far.

In contrast to these six studies, the Level III study by Gilchrist et al (1995) found no differences in psychiatric sequelae after abortion. The authors examined mental health outcomes after an unintended pregnancy among four comparison groups: women who had an abortion, women who were denied abortion, women who delivered, and women who delivered after first choosing abortion. Among these groups, mental health outcomes were classified according to previous psychiatric history including: (a) women who had a history of a psychotic disorder, (b). women who had a history of a non-psychotic disorder, (c) women who had a history of Deliberate Self Harm (DSH), and (d) women who had no psychiatric history. The strengths of the Gilchrist study included a prospective design, the only published study found that included a comparison group of women who wanted but were refused abortion, and a large sample size of more than thirteen thousand women with unintended pregnancies. Compared to

those who voluntarily delivered, the rate of deliberate self harm among those with no previous "psychiatric" history was increased both in those who were granted abortion (RR= 1.7) and in those to whom abortion was refused (RR= 2.9). In contrast, the rate of psychotic disorders was lower in those who delivered (Relative Risk RR = 0.4, 95% Confidence Interval CI= 0.3-0.7).

The authors attributed these results to the influence of confounding negative life events associated with the request for abortion and with self injurious behavior. However, the lack of adequate control for confounders, particularly with respect to self harm, limits the validity of these findings, and requires further examination. Thus, the authors excluded cases of Deliberate Self Harm from the psychiatric disorders classification for all groups. This exclusion decreased the number of women within the psychiatric illness groups and may have underestimated the overall rate of psychiatric morbidity. For example, Deliberate Self Harm was not fully specified, but included "drug overdoses." (p. 248). Deliberate Self Harm may also have meant cutting episodes, self mutilation or actions other than overdosing. Confusion on this issue means that, as a result of unconventional labeling of the data, the true rate of significant psychiatric illness for those for whom abortion was refused or denied in the Gilchrist study is not known. Among those with no previous psychiatric history, 89% of cases of Deliberate Self Harm (n=64) in whom abortion was obtained or denied, were drug overdoses. Yet, the authors do not specify the number of overdoses that were included in each group. The authors conclude that on the basis of the figures for psychosis and other non-psychotic psychiatric illness there is no increase in psychiatric illness as the result of terminating pregnancies. In general, psychiatrists treat attempted suicide and other self injurious actions as psychiatric or psychological disorders and cannot be satisfied with denying their inclusion among psychological illnesses.

While the large sample size of unwanted pregnancies and equivalent comparison groups are unique strengths of the Gilchrist study, the results are mixed and the coding for Deliberate Self Harm (attempted suicide) is unconventional. If the cases of Deliberate Self Harm, typically classified as a type of psychiatric disorder indicative of severe pathology, were coded conventionally, they would have been included in the psychiatric illness groups. This would have increased the cases of psychiatric illness for

women who had obtained an abortion or who were denied an abortion as compared to those who delivered and changed the direction of the results**.** Despite this, the American Psychological Association Task Force on Mental Health and Abortion recently cited this study as high quality evidence of the psychological safety of abortion (2008). Remarkably, this study has also been cited as the one of the best designed studies in two Level IV systematic reviews of the evidence on abortion and mental health (Charles et al., 2008; Robinson et al., 2009).

These findings contrast with the six other Level III studies that found higher problems after abortion as compared to other pregnancy outcome, even when controlling for negative life events. One Level III study by Mota et al., (2010), while finding results similar to those of Fergusson for higher rates of overall mental health problems, (AOR= 1.75 to 1.91), substance use and suicide after abortion (AOR= 1.97 to 2.18) among a nationally representative sample of women in the United States, concluded differently. Owing to the fact that more than 50% of the sample reported mental health disorders that preceded the abortion, the authors attributed these results to the influence of pre-existing mental health disorders as opposed to factors associated with the pregnancy and abortion itself. Yet, while the results of this study are consistent with others (Fergusson et al., 2009; Gissler et al., 1996; Morgan et al., 1997), the conclusions of linking these results to psychiatric disorders that preceded the abortion are limited by an inability to confirm the onset of psychiatric disorders, as well as the underreporting of lifetime abortions, which the authors themselves identify.

Level IV Evidence

Charles et al (2008) reviewed 700 potential studies reporting on the long term mental health effects of abortion. They included studies published within the past twenty years, studies with samples sizes greater than one hundred, and studies that examined outcome beyond three months. Twenty-one studies were reviewed. Studies were evaluated ranging from “excellent” to “poor”, with four studies of “very good” quality found. The authors concluded that the best studies report no differences in

mental health outcome for women after abortion when compared to women after other reproductive events. Despite this, for those who have psychological distress after abortion, the authors recommend psychological follow up services after abortion. The recommendation for psychological follow up services after abortion is congruent with the standard practice of recommending psychological follow up services for women who experience distress after other reproductive events. However, contrary to standards to disclose potential psychological risks to women prior to other reproductive procedures, the authors recommend against informing women of potential psychological risks prior to abortion. Robinson et al (2009) also reviewed 216 studies published after 1990. Inclusion criteria were studies that identified anxiety, psychological stress, suicide, and psychiatric disorders after abortion. Forty eight studies were included. The authors determined that those studies that found higher rates of psychiatric sequelae after abortion had significant methodological limitations. They concluded that the severity of psychological distress *after* abortion was determined by the severity of psychological distress *before* the abortion. Accordingly, they claim that psychological distress after abortion is associated with either pre-existing mental health problems, or the distress associated with the unwanted pregnancy, as opposed to the abortion experience itself**.**

Several limitations exist in these reviews. Both Charles et al and Robinson et al used similar methodology and found similar results as the review on abortion by the American Psychological Association (2008). All authors used their own evaluation criteria as opposed to standardized grades of evidence. Moreover, all three reports concluded that the Gilchrist study was the best study on abortion to date. Yet, all failed to mention any limitation of the Gilchrist study. In contrast, earlier reviews included the Gilchrist data to support their findings of higher rates of suicide, suicide attempt, and death after abortion (Cassidy and Gentles, 2003, Thorp et al., 2002), as well as noted the contradictions of the results (Cassidy and Gentles, 2003). Thorp, Hartmann, and Shadigian (2002) reviewed epidemiological data on the long-term physical and psychological health after abortion. Citing some of the same studies that are included in the current review, the authors found ten studies associating higher rates of suicide and suicidal behavior, psychiatric admissions, and self destructive behavior after abortion as

compared to other pregnancy outcomes based on medical record outcomes. They concluded that the association between abortion and suicide whether a causal, or otherwise, required further study. Accordingly, Thorp et al recommended changes to informed consent for abortion to include mental health risks, as well as screening, monitoring, and referring women for depression afterwards. Similarly, Cassidy and Gentles (45, 46) reviewed over five hundred studies on the medical and psychological effects of induced abortion and found higher rates of death, including suicide after abortion as compared to other pregnancy outcomes. Based on these data, the authors strongly recommend that informed consent prior to abortion include psychological risks and that services to treat women after abortion be made available. They also noted the limitations of the Gilchrist study in both ascertaining the validity of Deliberate Self Harm as well as the authors attributing their own results to confounding influences.

Earlier reviews that found that studies which found no or minimal adverse effects after abortion were later deemed flawed (Bianchi-Demicheli, 2007; Ney and Wickett, 1989; Rue, Speckhard, Rogers & Franz, 1989). Others found that only 10% of women experienced psychiatric morbidity after abortion (Zolese and Blacker, 1992**).** Risk for morbidity included younger age (Franz and Reardon, 1992), inadequate social support, pressure to abort, conflicted feelings about the abortion, traditional values (Speckhard and Rue, 1992), and high pre-abortion distress (Belsey et al., 1977).

Contrariwise, the above cited study by Fergusson et al (2008) used more rigorou**s** methodology to control for confounders both before and after abortion, followed women over a longer period of time, and found a small but definite increase in rates of psychiatric problems after abortion when compared to after delivery. Further, in a later analysis of the same cohort and continuing extensive control for confounders, Fergusson et al (2009) found while many do not experience distress after abortion, the more than 30% of women who did had a 40% to 80% increase in adverse mental health after abortion as compared with those with no abortion. We suggest that the results of Fergusson et al (2006; 2009) are, in fact, more generalizable than those of Gilchrist, due to the limitation in their classification of psychiatric harm, and the validity of their findings. See Table I-3 A Methodological Comparison between the Fergusson (2008) and Gilchrist Studies (1995).

Level V Evidence

Level V prospective and retrospective epidemiological studies strengthened earlier descriptive designs. Large population-based samples (Cougle et al., 2005; Dingle and Alati, 2008; Fergusson et al., 2006; Gissler et al., 2005; Gissler et al., 2004; Gissler et al., 1996; Morgan et al., 1997; Mota et al., 2010; Pederson, 2008; Reardon and Cougle, 2002), independent psychiatric endpoints including suicide rate (Gissler et al., 1996), psychiatric hospitalizations (Morgan et al., 1997; Reardon et al., 2003), maternal mortality (Gissler et al., 2004; 2005), and DSM-IV diagnostic criteria (Cougle et al., 2005; Fergusson et al., 2006; Mota et al., 2010;) thus minimizing interpretation bias; and comparisons of women after abortion with other reproductive events improve the evaluation of the impact of abortion within similar populations (Fergusson et al., 2008). Most retrospective Level V studies use medical records (Gissler et al., 2005, 2004; Morgan et al., 1997; Pederson, 2008; Reardon and Cougle, 2002) rather than patient self-report, thus minimizing patient recall and drop out rates.

The most striking Level V results appear in the three studies by Gissler at al (1996; 2004; 2005) conducted in Finland. In the first study, focused on suicide, 34.7 deaths per 100,000 women occurred after abortion vs. 5.9 deaths per 100,000 women after delivery (1996). In the second study, death rates included other causes of maternal death in both groups, as well as suicide. There were 83 deaths per 100,000 women after abortion vs. 28.2 deaths per 100,000 women after delivery (2004). In the third study, death rates adjusted for all ages, 60.3 deaths per 100,000 women after abortion vs. 10.3 deaths per 100,000 women after delivery (2005), came closer to the original odds ratio of death for suicide alone from the first study (OR= 4.14, OR= 5.9). Suicide rates vary, with a tendency to minimize, often for forensic purposes. In their second and third studies (Gissler et al., 2004, 2005) the authors examined additional factors to suicide, including homicide, and accidents. The one central factor in all cases is death. The lack of control for confounders prior the target abortion such as adverse life events or pre-existing mental health problems may have explained these results. Yet, the Level III work of Ferguson et al (2008; 2009), by controlling for most confounders, lends some support to the Gissler studies, plus several Level V studies, that there may be an

increased risk to mental health after abortion compared to delivery for some sub-populations of women.

In spite of design limitations, the similarity of findings comparing psychiatric morbidity and death in ten of the thirteen studies from Level V and above remain noteworthy. The six studies reporting suicide or death rates, including that of Fergusson et al, all had an odds ratio greater than two. Even Schmiege and Russo (2005) who reported no difference between groups found an odds ratio greater than one, OR= 1.19 (95% CI = 85-1.66).

In contrast, the three Level V studies that found different results support the view that abortion primarily relieves the stress associated with the unwanted pregnancy. This view results in classification strategies that *include* women with pre-abortion depression or anxiety in comparison groups as compared to others who view the abortion as a risk factor and *restrict* women with pre-abortion depression or anxiety in comparison groups. Early work by Reardon and Cougle (2002) analyzed data from the National Longitudinal Study of Youth (NLSY) and showed higher rates of depression after abortion compared to delivery (26% vs. 17.%) among first unintended pregnancies (OR= 2.38 95% CI 1.09-5.21). Schmiege and Russo (2005) analyzed the same data and found no difference (24% vs. 24%) between rates of depression after abortion when compared to delivery (OR= 1.19 95% CI 85-1.66)). Holding the view that abortion is not a stressor, Schmiege and Russo, complicated the delivery group by including women with a previous abortion. By including these cases, the authors reduced the statistical power in their comparison. In contrast, Reardon and Cougle restricted their comparison to the outcome after the first unintended pregnancy.

Fergusson et al (2006) also attempted to replicate the findings of Reardon and Cougle. First, Fergusson et al increased the number of confounders to control for socioeconomic, developmental, and familial determinants that could potentially contribute to outcomes after abortion. These included variables *prior* to and *after* the target pregnancy and abortion thus enhancing internal validity. After controlling for these, Fergusson found higher rates of depression, anxiety, and suicide (Relative Risk = 1. vs. .58, .66 for abortion, delivery, and controls) than did Reardon and Cougle (2002). Fergusson reported that unknown covariates associated with an unintended pregnancy,

and higher concealment rates are limitations of the study. Recognition of these limitations improved upon similar studies (Reardon and Cougle, 2002; Schmiege and Russo, 2005).

In the second study where abortion is not treated as a stressor, Steinberg and Russo (2008), using a similar methodological design to Schmiege and Russo (2005), attempted to replicate the study by Cougle et al (2005). Cougle et al found higher rates of DSM-IV General Anxiety Disorder after abortion from a first unintended pregnancy among women with no pre-morbid anxiety as compared to women with similar histories after delivery from a first unintended pregnancy. However, Steinberg et al used less stringent criteria for anxiety after abortion than did Cougle such as not controlling for anxiety before pregnancy, using invalid outcome measures, and not identifying the presence of anxiety since the abortion. As a result, Steinberg et al found no difference in anxiety between groups after delivery or abortion OR= 0.84 (.045-1.88). These limitations in design may have masked the differences among groups. Compounding this trend, the exposure to violence and the incidence of pre-pregnancy anxiety are factors that contribute to an unintended pregnancy and contribute significantly when controlled for anxiety after abortion (OR= 43.4; 29.4-62.5).

In the third divergent study, similar to Steinberg and Russo (2008), Taft and Watson (2008) found non-significant rates of depression after abortion. Yet, when the results were adjusted for partner violence, depression rates increased to OR= 2.45 (1.99-3.04). While the authors suggest that partner violence contributed to adverse mental health after abortion, rates of depression after abortion are known to increase after abortion also (Reardon and Cougle, 2002).

Level VI Evidence

In Level VI studies, high attrition rates of 50% (Major et al.,. 2000) and 43% (Athanasiou, Oppel, Michelson Unger & Yager, 1973), and lack of control for interviewer bias (Greer, Lal, Lewis, Belsey & Beard, 1976), may explain minimal rates for psychological distress after abortion.

Level VII Evidence

Of the several expert opinions in Level VII evidence found, some were recently revised. In 2008, the Royal College of Psychiatrists updated its statement on women's mental health after abortion citing that no conclusions can be drawn and called for a full systematic review of the evidence. They further recommend informing women and assessing for psychological risks after abortion (2008). Similarly, the Royal College of Obstetricians and Gynecologists (2004) revised their practice guidelines for performing abortions to include recommendations to assess for risks for suicide and self-harm after abortion based on the current evidence. In contrast, the American Psychological Association (2008) updated their position statement on the impact of abortion on women's health, and concluded that a single, first trimester abortion does not adversely affect mental health for adult women. In addition, while presented as evidence-based, guidelines from the National Abortion Federation (2005), the American College of Obstetricians and Gynecologists (2001), the Scottish Intercollegiate Network on Perinatal Health (2002), the American Psychiatric Association (2005) and the World Health Organization (2003a; 2003b), do not cite any data associating health risks with abortion. Further in 2005, the Royal Australian and New Zealand College of Obstetricians and Gynecologists in their guidelines for termination of pregnancy reported that mental health problems after abortion are rare and are not related to the abortion (2005).

Discussion

First, we found two systematic reviews of research on adverse patient outcomes to abortion (Charles et al., 2008; Robinson et al., 2009) which concluded there is little difference in mental health outcome after abortion when compared to other pregnancy outcomes. Our findings on the incidence and quality of studies that reported distress after abortion support that, for some women, there is a difference in mental health outcome after abortion when compared to other pregnancy outcomes.

Applying the most stringent design strategies when compared to other studies, the preliminary results of Ferguson et al (2008) suggest that abortion, when compared to other reproductive events, may independently increase the risks for adverse psychological sequelae for some populations. The authors also found that adverse outcomes can stem from factors associated with the pregnancy and the abortion (2006) as well as a negative emotional experience of abortion (2009). Countries such as Canada and the United States, where abortion is available without restriction, need to conduct similar studies.

Second, some studies support the view that the abortion, while relieving some stress, may potentially contribute other stress for some high risk groups. Regardless of circumstances for some women, the abortion does not appear to relieve distress, and may add more risks than delivery, or may compound existing risks.

Third, the studies cited in this review expose an association between abortion, depression, and suicide for some women. Meanwhile, providing abortion without informing, assessing, or treating those at risk may be contributing to women subsequently experience distress.

Fourth, deaths from abortion may be missed for several reasons. Studies of suicide after pregnancy (Lindhal, Pearson & Cope, 2005)) do not match types of suicidal behavior with types of pregnancy outcome. Hence, rates of completed suicide, a public health priority, are not examined according to pregnancy outcome, particularly, abortion. Current diagnostic codes do not adequately define a psychiatric disorder or psychiatric death related to abortion. The International Classification of Disease, Tenth Edition (ICD-10) (World Health Organization, 1993) defines maternal mortality as a death occurring from obstetrical causes up to one year after delivery (ICD-10 Codes 094- 097) or a death occurring from psychiatric causes, such as suicide, only up to 42 days after delivery (ICD-10 Code 53). Those time frames are inadequate to evaluate psychological responses after abortion. Moreover, the ICD-10 includes codes for medical complications (000-008), but not for psychiatric complications or death after abortion. A Pregnancy Related Psychiatric Illness (F53) is defined as occurring six weeks after delivery. If depression begins six weeks after abortion, and leads to suicide, it is not classified as an abortion related death.

Further, whereas the DSM-III classified abortion, miscarriage and unintended pregnancy as psychosocial stressors, neither the DSM-IV-TR (American Psychiatric Association 2000) nor the ICD-10 for Mental and Behavioral Disorders identify abortion as a psychosocial stressor. DSM-IV-TR and ICD-10 psychiatric diagnoses applied to distress after abortion have been reported in the literature. (See Table I-4 DSM-IV and ICD-10 Classification for Psychological Distress after Abortion. We suggest that the DSM-V restore pregnancy and all types of reproductive outcomes as potentially stressful life events for some women.

Finally, the practice guidelines for abortion that were reviewed reflect a consensus rather than evidenced-based approach. Only the Royal College of Obstetricians and Gynecologists (2004), cite the Gissler evidence on abortion and suicide. Among guidelines on suicide, the American Psychiatric Association Practice Guideline for the Assessment of the Suicidal Patient (2005) fails to include any pregnancy event as a risk for suicide. The prevalence of suicide after abortion remains significant (Fergusson et al., 2006; Gisslet et al., 2005; 2004, 1996; Morgan et al, 1997; Mota et al., 2010), perhaps because of this lack of attention.

Conclusions

This review provides a third Level IV study in agreement with the Level III preliminary evidence of Fergusson and colleagues. Studies similar to that of Fergusson need to be replicated among birth cohorts in countries with more liberal abortion policies in order to enhance the generalizabilty of these findings. Fergusson's data indicate that at least, a small number of women experience post abortion distress or psychiatric complication as a direct result of the abortion. Women are entitled to be informed of the evidence on the psychiatric risks of abortion compared to delivery. Professional practice guidelines need to reflect available data. Research, education, and practice need to focus on preventing psychiatric mortality and morbidity among some sub-populations of women who choose abortion.

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Figure I-1. ELIGIBILITY OF STUDIES FOR INCLUSION IN MOOSE

Citations Identified from electronic databases
Medline, Psych Info, CINHAL (n=1350)

Citations excluded (n=1208)

Abstracts selected for
potential inclusion (n=143 English studies)

English Studies Included (n=19)

English studies excluded (n=124)

1. Intervention studies (n=2)
2. Journal article (n=11)
3. Comparing abortion methods (n=7)
4. Abortion for Fetal Anomalies, Missed Abortion, Pregnancy Failure, Fetal Reduction (n=21)
5. Psychosocial Outcomes (n=10)
6. Mental Health Usage, Sleep Disorders (n=2)
7. Pregnancy Outcome after Prior Abortion (n= 2)
8. Abortion decision-making (n=16)
9. Post abortion case studies (n=4)
10. Other, ie. Pain (n=2), rape (n=1), ethics (n=3), partner (n=7), repeat citations, grief n=6, commentaries (n=8), theory n= 2, therapy n= 2
11. Inadequate sample sizes, poor methodology, self-selected samples n=18 **)**

Abstracts of Non-English Studies
selected for potential inclusion
(n=7, French, German, Bulgarian)

Non-English studies excluded (n=7)

1. Inadequate sample size n=5
2. Non-English abstract n=1
3. Non-standardized measures n=1

Additional studies identified in PILOTS,
BIOSIS, Cochrane Collaboration,
Web of Science, Bibliographies,
Hand searches (n= 15)
Practice Guidelines
(n=4)

Total Studies included in analysis (n= 38)

Table 1-1

INCIDENCE OF ABORTION WORLWIDE AMONG SELECTED COUNTRIES

Country		Abortion Rate Abortions/1000 Women		Total Reported	Year
		Women All Ages	Aged 20-24		
Former Soviet Union (a)	15-49	112	N/A	2.3 million	2002
United States (b)	15-44	24	53	1.5 million	2002
United Kingdom (c)	14-49	17.8	31.9	185,400	2004
Canada (d)	15-44	15.2	26	103,768	2003
Australia (e)	15-44	22.2	36.9	91,900	2002
Netherlands (f)	14-49	5	N/A	33,342	2002
Worldwide (g)	15-44	35	N/A	42 million	2007

(a) Alan Guttmacher Institute 2002

(b) United States Center for Disease Control 2002

(c) Department Health, Abortion Statistics England, Wales: 2004

(d) Statistics Canada, Daily English March 15, 2006

(e, g) United Nations Abortion Surveillance 2002, 2007

(f) Ministry of Health, Welfare, and Sport, Netherlands 2004

Table I-2

STUDIES OF PSYCHOLOGICAL DISTRESS AFTER ABORTION ACCORDING TO LEVELS OF EVIDENCE

Level I Evidence from Systematic Review of Randomnized Controlled Trials

None

Level II Evidence from at Least One Randomized Controlled Trial

None

Level III Evidence from Well-designed Controlled Trials without Randomizatiom

Date	Author	Sample	Design	Time Post Abortion	Outcome Criteria	Result	Odds Ratio (95% Confidence Interval)
1995	Gilchrist et al	N=13,261 women from United Kingdom	Prospective Comparison	Pre-- 6 mos. post abortion	Deliberate Self Harm (DSH)	Higher DSH post abortion & denied abortion v.delivery	Relative Risk 1.7 (1.1-2.6) Relative Risk 2.9 (1.3-6.3)
2006	Fergusson et al	N=1265 women from New Zealand Birth-25 yrs.	Prospective Epidemiological Longitidunal	10 yrs. pre-post abortion	DSM-IV Criteria	Higher depression anxiety, suicide post abortion v. delivery (Relative Risk for mental risks 1 vs. .58,. 66 for abortion, delivery, controls)	OR= 1.83 (1.19-2.81) OR= 1.67 (1.07-2.61) OR= 2.19 (1.31-3.67)
2008	Fergusson et al	N=534 women From New Zealand Birth-30yrs.	Prospective Epidemiological Longitudinal	Birth- 15 yrs. post abortion	Diagnostic Interview For Children; DSM-IV Criteria	Higher depression anxiety, suicide post abortion v. controls Adjusted for all psychaitric problmes abortion vs. pregnancy loss (Attributal Risk of abortion to all mental problems	OR= 2.15 (1.44-3.23) OR= 2.25 (1.49-3.42) OR= 2.25 (1.30-3.89) OR=1.37 (1.16-1.62) OR=1.25 (1.01-1.53) (1.5% -5.5%)
2008	Dingle, et al	N=1223 womne from Australia Birth- 21 years	Prospective Epidemiological Longitudinal	Birth- 10 yrs. post abortion	Composite International Diagnostic Interiew	Higher depressive, alcohol disorders post abortion, vs. miscarriage Higher substance disorders post abortion and miscarriage	OR=1.9 (1.1-3.2) OR= 2.1(1.3-3.5) OR= 3.6(2.0-6.7) OR= 2.6 (1.2-5.4)

2008	Pederson, W.	N=768 women from Norway 15-27 years	Prospective Epidemiological Longitudinal	Up to 12 yrs. post abortion	Kandel/Davie Depressive Inventory	Higher depression post abortion v. delivery, controls.	OR= 2.9 (1.7-5.6), 1.0 (0.6-1.7), 1.0
2009	Fergusson et al	N= 117 women from New Zealand 15-30 years	Retrospective Epidemiological Comparison	Up to 15 yrs. post abortion	DSM-IV Criteria Composite International Diagnostic Interview	Higher number of adverse reactions For Abortion vs. No abortion Abortion with no distress, Abortion with 1-3 adverse reactions Abortion with 4-6 adverse reactions Abortion with 1-3 adverse reactions	IRR= Incident Risk Ratio IRR= 1.0 IRR = 1.24 (0.99-1.55) IRR= 1.43 (1.20-1.70) IRR= 1.64 (1.23-1.60) IRR= 1.43 (1.20-1.70)
2010	Mota et al	N=3310 women from USA aged 18 and older	Prospective Epidemiological Comparison	Number of lifetime abortions	DSM-IV Criteria Comoposite International Diagnotistc Interview	Higher mood disrders for Abortion vs. no abortion Higher anxiety disorders for Abortion vs. no abortion Higher suicidal behavior Abortion vs. no abortion	AOR= 1.75 to 1.91 AOR= 1.87 to 1.91 AOR= 1.97 to 2.18

Level IV Evidence from Systematic Reviews

2008	Charles et al	N= 21 studies on abortion & mental health	Systematic review N= 700 studies	At least 90 days post abortion	Psychosocial & DSM-IV Criteria	Best evidence found little difference in mental health post abortion vs. other pregnancy outcomes Recommend follow up services to women who request them No need for informed consent
2009	Robinson et al	N= 48 studies on abortion and mental health	Literature review N= 216 studies	Studies after 1990	Anxiety, depression, post abortion syndrome, Suicide, mental health	Studies showing increased psychaitrc risk associated with abortion have design problesm. Better designed studies show abortion is not associated with negative outcomes.

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Level V Evidence from Epidemiological, Correlational, and Case-Controlled Studies

Date	Author	Sample Size	Design	Time Pre-/Post Abortion	Outcome	Result	Odds Ratio (95%CI)
1981	David et al	N=71,378 medical records from Denmark	Epidemiological, Comparison	90 days post abortion	Psychiatric Hospitali-zation	Higher hospitalization post abortion v. delivery	OR= 1.58 (1.08-2.30) (18.4 vs 12.0/100,000)

1996	Gissler et al	N=9000 medical records from Finland	Epidemiological, Comparison	1 year post-abortion	Maternal Suicide	Higher suicide post abortion vs. delivery	OR= 5.9 (3.6-9.9) (34.7 vs. 5.9/100,000)
1997	Morgan et al	N=408,000 medical records United Kingdom	Epidemiological Comparison	30 days post abortion	Hospitalization for suicide	Higher hospitalization post vs. pre-abortion	OR= 2.46 (1.38-4.37) (Relative Risk 3.25 vs. 1.72)
2002	Reardon et al	N= 4463 medical records in USA	Epidemiological Comparison	Up to 12 years	Depression Center for Epidemiological Studies	Higher depression post aborion v. delivery for married women	OR= 2.38 (1.09-5.21) (26.2% v. 17.3%)
2002	Reardon et al	N=173,279 medical records in United States	Epidemiological Comparison	1 year pre and 8 yrs. post abortion	Death Certificate	Higher death, suicide post abortion vs. delivery	OR= 1.62 (1.38-2.0) OR= 2.4 (1.5-3.6)
2003	Cougle et al	N=1,884 women in United States	Epidemiological Comparison	8 years post abortion vs. delivery	Depression Center for Epidemiological Studies	Higher depression post abortion v. delivery	OR= 1.65 (1.12-2.43) (27.3 vs. 21.4%)
2003	Reardon et al	N=56,741 medical records from United States	Epidemiological Comparison	3-48 mos. post abortion	Psychiatric Hospitaliza-tion	Higher hospitalization post abortion v. delivery (Adjused Rate = 408.4 v..152/100,000)	OR= 2.6 (1.3-5.3)
2004	Gissler et al	N=15,823 medical records from Finland	Epidemiological Comparison	1 year post abortion	Maternal Mortality	Higher mortality post abortion v. delivery	OR= 2.6 (1.85-3.89) (83 vs. 28.2/100,000)
2005	Schmiege & Russo(	N=1247 women from United States	Epidemiological Comparison	1 to 20 yrs.	Depression Center for Epidemiological Studies	No difference in depression post abortion vs. delivery	OR= 1.19 (.85-1.66) (24% vs.24%)
2005	Cougle et al	N=4,463 medical records from United States	Epidemiological Comparison	10 years post abortion	DSM-IV Criteria	Higher Generalized Anxiety Disorder post abortion vs.delivery	OR= 1.34 (1.05-1.70) (142/1033 vs.183/1813)
2005	Gissler et al	N=5,299 medical records from Finland	Epidemiological Comparison	1 year post abortion	Pregnancy Related Mortality	Higher deaths post abortion vs.delivery (Adjusted for age = 60.vs 10/.100,000)	OR= 4.14 (2.59-6.61)
2008	Taft et al	N= 9692 women From Australia	Epidemiological Longitudinal	Up to 12 years post abortion	Depression Center For Epidemiological	Higher depression post abortion v. delivery (Adjusted for Partner Violence)	OR= 1.3 7 (1, 12-6). OR= 2.3 to 2.45(1.99-3.04)

2008	Steinberg et al	N=10,847 medical record from United States	Epidemiological Longitudinal	Up to 30 years post abortion	Interviewer Survey	Higher anxiety abortion v. delivery Adjusted for pre-pregnancy anxiety	OR= 1.42 (1.13-1.77) OR= 43.5 (29.4-2.6..5)
		N=3054 medical record from United States	Epidemiological Longitudinal	Up to 40 yrs. post abortion	DSM-II Criteria for Anxiety Disorders	No difference for Genealized Anxiety Higher, not signifcant for PTSD Higher violence post v. no abortion	OR= 0.84 (0.45-1.88) OR= 1.35(.067-2.73) (37.3 % v. 26.2 %)

Level VI from Individual Descriptive Studies of Samples > 100 Women

Date	Author	Sample Size	Design	Time Pre-Post Abortion	Outcome Criteria	Result
1955	Ekblad	N=479 women from Scandinavia	Prospective	Up to 2 years post abortion	Structured Interview	30% report negative reactions, regret and depression
1973	Athanasiou	N=373 women from USA	Prospective	16 mos. post abortion, delivery	Symptom Checklist	Same depression rate post abortion, v. delivery (8.1 vs. 9.1)
1975	Kumar et al	N= 119 women from UK	Prospective	1-2nd trimester 1st pregnancy	Structured Interview	Higher depression post abortions v. delivery (38% vs (8%)
1976	Greer et al	N=360 women UK	Prospective	Up to 24 mos. post abortion	Structured Interview	Psychiatric symptoms improve post abortion (p<.00001) 11% required psychiatric treatment
1977	Belsey et al	N= 326 women UK	Prospective	Up to 3 mos. post abortion	Structured Interview	26% required psychiatric treatment, 17% report suicidal ideation/attempt post abortion
1984	Bradley (	N=254 women from Canada	Prospective	Pregnancy—1yr..postpartum	Structured Interview	Higher depression post-abortion vs. no-abortion {t(216)=-2.88, p<.004} v. {t(202)=-3.01,p<.003}.
1989	Zabin and Hirsch	N=360 adolesecents from USA	Prospective	2 yrs. post abortion, delivery	State-Trait Anxiety	Lower anxiety post abortion v delivery, comtrols (43.6 & 45.7, 48.3 & 52 vs. 47.8 & 53; p<0.01)
1999	Major et al	N= 442 womenfrom USA	Prospective Descriptive	Pre- 2 yrs post abortion	Brief Symptom Inventory	Low distress post v. pre-abortion BSI < 4; Mean = 0.72 v. M 1.01, p<.001) 65% report intrusive symptoms of abortion

2000	Major et al	N=442 women USA	Prospective Descriptive	Pre- to 2 years post abortion	Diagnostic Interview Scale	20% depressed, 1% met criteria for PTSD
2001	Wheeler & Austin	N=164 adolescents from USA	Cross Sectional Comparison	2 yrs post pregnancy loss vs, pregnant vs. controls	Child Depression Inventory	Higher depression post abortion, miscarriage vs. pregnant vs controls (16.2 vs. 12.0 vs 11.0;p< 0.04)
2002	Mufel, et al	N=150 women from Belarus	Retrospective, Descriptive	6-10 years post abortion	Impact of Event	46% met critria for Post Traumatic Stress Disorder > 16 score on intrusion and avoidance symptoms.
2004	Rue et al	N=548 women of Russia/USA	Retrospective	6-10 years post abortion	Traumatic Stress Scale	79% met full/ partial criteria for PTSD of abortion

Level VII Evidence from Expert Committees, Consensus Reports, and Practice Guidelines

Date	Author	Report	Conclusion
2004	Royal College of Obstetrics and Gynecology	Practice Guidelines for Care of Women Requesting Abortion	Recommend assessing for suicide & self-harm after abortion.
2005	Royal Australian & New Zealand College of Obstetricians and Gynelcologists	Terrmination of Pregnancy: A Rescource for Health Professionals	Adverse psychological reaction to abortion are rare, stem from pre-existing conditions. Young women experience mild distress, not related to the abortion.
2008	Royal College of Psychiatrists	Position Statement on Women's Mental Health in relation to Induced Abortion	Evidence is inconclusive. Recommends informed consent & practices that identify risks of abortion. Systematic reviews required.
2008	American Psychological Asociation	APA Task force on Mental Health and Abortion	Reports no mental health risk from a single, legal, 1st trmester abortion for adult women.

Table 1-3 A Methodological Comparison between Fergusson and Gilchrist Studies

Methodological Category	**Fergusson Study** (2008) *Rating for* *Strength (+)* *Limitation (-)* *Best Known (++)*	**Gilchrist Study** (1995) *Rating for* *Strength (+)* *Limitation (-)* *Best Known (++)*
Design	Prospective Longitudinal **(+)**	Prospective Longitudinal **(+)**
Sampling Strategy	Representative Sample **(+)**	Convenience Sample **(-)**
Sample Size	N= 534 women from New Zealand intended and unintended pregnancies **(-)**	N= 13,261 women from United Kingdom with unintended pregnancies **(++)**
Comparison Groups	Compared groups after: (1) aborted unwanted pregnancy, (2) miscarried unwanted pregnancy, (3) delivered wanted pregnancy (4) delivered unwanted pregnancy **(-)**	Compared groups with unwanted pregnancy: (1) after abortion (2) after delivery (3) after abortion denied (4) after chose abortion, then delivered **(++)**
Outcome Evaluation	Standard DSM-IV Criteria **(+)**	Non-Standard Rated by General Practitioner **(-)**
Concealment Rate for Abortion	10% **(++)**	Not specified **(-)**

Time Followed Pre-abortion Abortion	Birth to first pregnancy/abortion (++)	6 months to target pregnancy/psych. disorder **(-)**
Time Followed Post Abortion	Up to fifteen years **(++)**	Up to three years (-)
Control for Confounders	Controlled for > 30 confounders, ie behavioral, social,	Controlled for age, demographic, parity, psychiatric
Types	psychiatric, familial, early childhood, adverse events, and others **(++)**	history, education **(-)**
Time Pre-Abortion	Birth to 1st pregnancy/abortion **(++)**	6 months to pregnancy or psychiatric illness **(-)**
Time Post Abortion	Up to 15 years **(+)**	Up to 3 years **(-)**
Results	Higher rate of all psychiatric disorders after abortion . (OR= 1.37)	Higher rate of DSH after abortion obtained (RR=1.7) or abortion denied (RR=2.9)
Conclusions	Results consistent across stages of development **(++)**	Results inconsistent attributed to uncontrolled confounders with request for abortion. **(-)**

(+) Refers to comparatively stronger design between Fergusson and Gilchrist studies

(-) Refers to comparatively weaker design between Fergusson and Gilchrist studies

(++) Refers to strongest design known as compared to similar studies on abortion.

Table I-4 DSM-IV and ICD-10 CLASSIFICATION FOR

PSYCHOLOGICAL DISTRESS AFTER ABORTION

DSM-IV- TR Classifications

- Acute Stress Disorder
- Adjustment Disorder, with Depression, Anxiety, or Mixed
- Brief Reactive Psychosis
- Depressive Disorder
- Eating Disorder, Onset/ Exacerbation
- Generalized Anxiety Disorder
- Personality Disorder, Exacerbation
- Post Traumatic Stress Disorder, Acute, Chronic or Delayed
- Substance Abuse Disorder, Onset/Exacerbation

IC-10 Mental and Behavioral Disorders

- Acute Stress Reaction
- Adjustment Disorder
- Depressive Episode, mild to severe
- Disorders of the Puerperium, mild to severe
- Grief Reaction
- Mixed Anxiety and Depressive Disorder
- Post Traumatic Stress Disorder
- Reactive Depression
- Reaction to Severe Stress
- Reactive Depressive Psychosis
- Recurrent Depressive Disorder
- Substance Use, Harmful or Dependence

CHAPTER THREE
THE PRE-CLINICAL PHASE OF INTERVENTION DEVELOPMENT
(Continued)

Part I: The Theoretical Basis for Developing the Intervention

A Description of the Theory Selected for the Intervention

Introduction

Because no interventions data after abortion were found, the goal of the thesis was to develop an intervention. The first and Pre-Clinical Phase of intervention development began by determining a theoretical basis for treatment. A theoretical perspective to understand adverse psychological responses to abortion was proposed, and included a bio-psychosocial framework, theory, and conceptual model. The theory of abortion as a type of psychological stressor for some women that was used in the literature review provided the organizing construct. Because distress after abortion remains controversial, a detailed account of the approach is provided

A Bio-psychosocial Framework

In his treatise on the nature of scientific change, Kuhn (1977) asserts that old paradigms submit to new advances in knowledge. Some claim that a political framework dominates healthcare (Andropoulis, 2000; Cahill, 1999). In particular, a political rather than health framework dominates abortion. As a result, the existing pro-life vs. pro-choice paradigm for abortion does not consider women who choose abortion and subsequently experience negative health outcomes. This may be why healthcare professionals have been slow to recognize psychological complications after

abortion. A framework for abortion that is oriented toward health and illness is required and consistent with most nursing and healthcare phenomena. A bio-psychosocial framework applied to abortion includes a continuum of responses ranging from health to illness, as well as a hierarchy of responses including biological, psychological, social, and spiritual domains. Further, a bio-psychosocial framework broadens investigation to include critical neurobiological processes associated with abortion, an area that has not yet been studied. Whereas no data for stress hormones in response to abortion were found, as well as no data for reproductive hormones in response to abortion were found, the following section proposes an explanation of biological processes associated with psychological distress after abortion.

Psychological responses to abortion can range from emotional relief to severe emotional distress. Women who experience no, minimal, or temporary psychological distress after abortion do not require healthcare services. In contrast, women who experience significant or persistent psychological distress after abortion require healthcare services that presently do not exist.

Biological Responses to Psychological Distress After Abortion

Women who experience psychological distress after abortion appear to reflect a stress response to abortion that is maladaptive. Psychological stress responses after abortion which are maladaptive include depressive, anxiety, behavioral, self-destructive, and post traumatic stress disorders which vary in severity. Similar to psychological stress reactions from other stressful events, psychological stress reactions to abortion can be acute or chronic. The following hypothesis proposes a biological model to explain psychological stress reactions to abortion, with attention to the concept of allostasis. Allostasis describes adaptive and maladaptive physiological responses to stress. When applied to abortion, the concept of allostasis provides one explanation for mental health problems after abortion, and a step toward closing a consensus gap.

According to McEwen (2003) allostasis refers to the concept of physiological stability during change which is adaptive and required for survival. During allostasis the hormonal stress response is activated in order to mediate daily and major life stressors. This stimulates the amygdale and autonomic nervous system to release stress mediators, including hormones such as cortisol and catecholamines (Kirshbaum et al., 1999). Adaptive stress mediators include the initiation, continuation, and turning off of stress hormones when no longer needed. This mechanism is protective in the short-term, but can be detrimental in the long term, if the stress response is maladaptive. A maladaptive stress response can result from too many adverse events or from a hormonal dysfunction (McEwen, 2003).

Maladaptive stress responses fail to mediate stressors by the over-activation, under-activation, or non-activation of stress hormones. An imbalance of stress hormones reflects a dys-regulation of the hypothalamus-pituitary-adrenal (HPA) axis, sustained activation of the amygdale, and results in allostatic load (McEwen 1989). Allostatic load reflects the inability to mount an adequate stress response and refers to the cumulative impact of repeated attempts to manage stress over time. McEwen (2003) describes four pathways leading to allostatic load. These include: (a) the experience of multiple and repetitive stressors, (b) the inability to adapt to a single stressor, (c) the delayed response to a stressor, and (d) the inadequate hormonal response to a stressor. Allostatic load is associated with conditions of chronic psychological stress such as Post Traumatic Stress Disorders and major depression (McEwen, 2003). The following hypothesis applies the concept of allostatic load to the biological mechanisms underlying psychological distress after abortion. Since no data on biological responses to abortion were found, the hypotheses are proposed.

Conceivably, women who experience relief or no adverse psychological outcomes after abortion maintain allostasis through an adaptive hormonal response to the abortion experience. Conversely, women who experience severe or prolonged *psychological stress* from the abortion demonstrate a maladaptive response to the stress of the abortion resulting in *psychological distress.*

It can be postulated that the stress response activates upon the confirmation of the pregnancy, sustains for the duration of the pregnancy, and after abortion, either

resolves, in the case of an adaptive stress response, or persists or heightens, in the case of a maladaptive stress response. For those that experience intense psychological distress after abortion, symptoms or variations of post traumatic stress disorders and depressive disorders can result (Speckhard and Rue, 1992).

A maladaptive stress response after abortion results in allostatic load. This thesis postulates that allostatic load after abortion can manifest from any of the pathways as described by McEwen. For example, a woman may experience multiple stressors in her life such as early adverse life events which may not have been addressed prior to the unintended pregnancy and abortion leading to allostatic load. This pathway explains the conclusion that mental health problems that occur after abortion are the result of mental health problems that precede the abortion.

Alternatively, a woman may be unable to adapt to the abortion experience itself which may exceed her expectations, internal coping skills, or external resources resulting in allostatic load as well. This causal mechanism explains the conclusion that the abortion experience may independently contribute to psychological distress afterwards. This pathway may be particularly relevant for younger women due to their limited coping skills. Further, this mechanism suggests that allostatic load occurs from the impact of a single stressor even in the wake of previous stressors. For example, Young, Tolman, Witkowski and Kaplan (2004) examined salivary cortisol levels on a sample of women with a history of multiple stressors. They found that lowered cortisol levels reflected recent as opposed to chronic conditions of stress. Applying this finding to abortion, this suggests that while some women may experience variations in cortisol levels from stressors which *precede* the abortion experience, others may experience variations in cortisol levels *as a result* of the stress of the abortion experience. Similar studies testing cortisol after abortion need to be conducted.

Further, a woman may experience a delayed stress response to abortion where she may first experience a latency period followed by the emergence of distress later causing allostatic load. Delayed stress responses can be considered as chronic stress responses because an adaptive resolution to the abortion does not occur. According to Speckhard and Rue (1992) many women experience an eight to twelve year delay in

psychological distress after abortion. They posit that the distress of the abortion can be awakened by a subsequent pregnancy, or other stressful events.

Finally, a woman may experience an inadequate hormonal response to abortion resulting in allostatic load. Inadequate hormonal responses may be due to a biological vulnerability based on individual, genetic, or familial risk factors for distress after any reproductive event, including abortion. For example, Sichel (2003) found that during pregnancy cortisol levels increase up to threefold by the end of the third trimester and after delivery remained elevated for up to 8 weeks postpartum before returning to baseline. It is thought that women who sustain higher than normal levels of cortisol may be more biologically vulnerable to post partum mood disorders (Pederson, Stern, & Pate, 1993). Similarly, women with variations in cortisol levels either prior to or after abortion, may be more biologically vulnerable to adverse sequelae after abortion.

Abortion, as a type of pregnancy outcome, is a biological experience. Similar to other types of perinatal mood and anxiety disorders, psychological distress after abortion, may also reflect variations in levels of reproductive hormones. In particular, changes in estrogen levels could potentially contribute to psychological distress after abortion. Since estrogen is associated with the regulation of women's moods, the withdrawal of estrogen during reproductive events is thought to be associated with perinatal mood and anxiety disorders, particularly post partum depression (Davidson, Murray, Challis et al., 1987; Lofgren & Backstrom 1990). The estrogen withdrawal theory suggests that during pregnancy estrogen levels increase to almost 200 times their normal level. During labor, when estrogen, a strong regulator of serotonin, is withdrawn, some women may be more biologically prone to lowered serotonin levels resulting in depression. According to this theory, the *magnitude of change*, rather than *absolute* levels of estrogen accounts for some postpartum disorders.

Applying the estrogen withdrawal theory to abortion provides another biological mechanism to explain mood reactions after abortion. It can be hypothesized that during abortion the abrupt withdrawal of estrogen, even in lowered amounts such as in the first and early second trimesters, may cause a sharp decline in estrogen levels. This rapid change in estrogen levels may pose a risk for mood reactions after abortion for some women. While no such data was found, exploratory studies evaluating variations in

estrogen associated with induced abortion and its impact on subsequent mental health need to be conducted.

Because of similar biological processes across all pregnancy outcomes, psychological disorders after abortion share risk factors with psychological disorders postpartum. Risk factors that have been identified with postpartum disorders include pre-morbid psychopathology, early adverse life events, poor social support, previous abortion (Kumar and Robson, 1978), younger age, single status, and unsatisfactory interpersonal relationships (Spinelli, 1999), and concealment of pregnancy (Miller 2003). Likewise, risk factors associated with psychological disorders as the result of abortion include pre-morbid psychopathology (Mota et al., 2010; Robinson et al 2009) younger age (Franz and Reardon 1992), concealment from significant others (Major and Granzow 1999). single status, poor social support (David, Rasmussen & Holdt, 1989), conflicted relationship with mother and late trimester abortion, (Speckhard and Rue, 1992).

A comparison of risk factors for both abortion and postpartum psychiatric disorders is categorized into several domains including biological risks, psychosocial risks, individual risks, and contextual risks that are related to the obstetrical procedure. Since some determinants of risk for postpartum mood disorders are amenable to intervention, this thesis proposes that similarly some determinants of risk for post-abortion distress are amenable to intervention, as well. Determinants of risk associated with abortion and modifiable by intervention may include lack of social support, inadequate pre-abortion counseling, unrealistic abortion expectations, and inadequate post abortion coping skills. See Table I-5 A Comparison of Risk Factors for Post Abortion and Postpartum Psychological Distress below.

Table I-5 ***A Comparison of Risk Factors for Psychological Distress Post-abortion and Postpartum***

Risk Factors	Post Abortion	Postpartum Psychological
Biological Factors	Pre-morbid psychopathology	Pre-morbid psychopathology
	Early adverse life events	Early adverse life events
	History of physical abuse	History of physical abuse
Psychosocial Factors	Lack partner support	Lack partner support
	Social isolation	Social isolation
	Concealment of pregnancy/abortion	Concealment of pregnancy
	Feel forced to abort	Feel forced to deliver
Individual Factors	Younger age	Younger age
	Negative relationship with mother	Negative relationship with mother
	Previous abortion(s)	Previous abortion(s)
	Conservative values	
	Maternal characteristics	
Obstetrical Factors	Physical complications	Physical complications
	Unsatisfactory abortion experience	Unsatisfactory delivery
	Inadequate pre-abortion counseling	Inadequate childbirth education
	Late trimester abortion	
	Exposure to embryo/fetus	
	Ambivalent decision to abort	

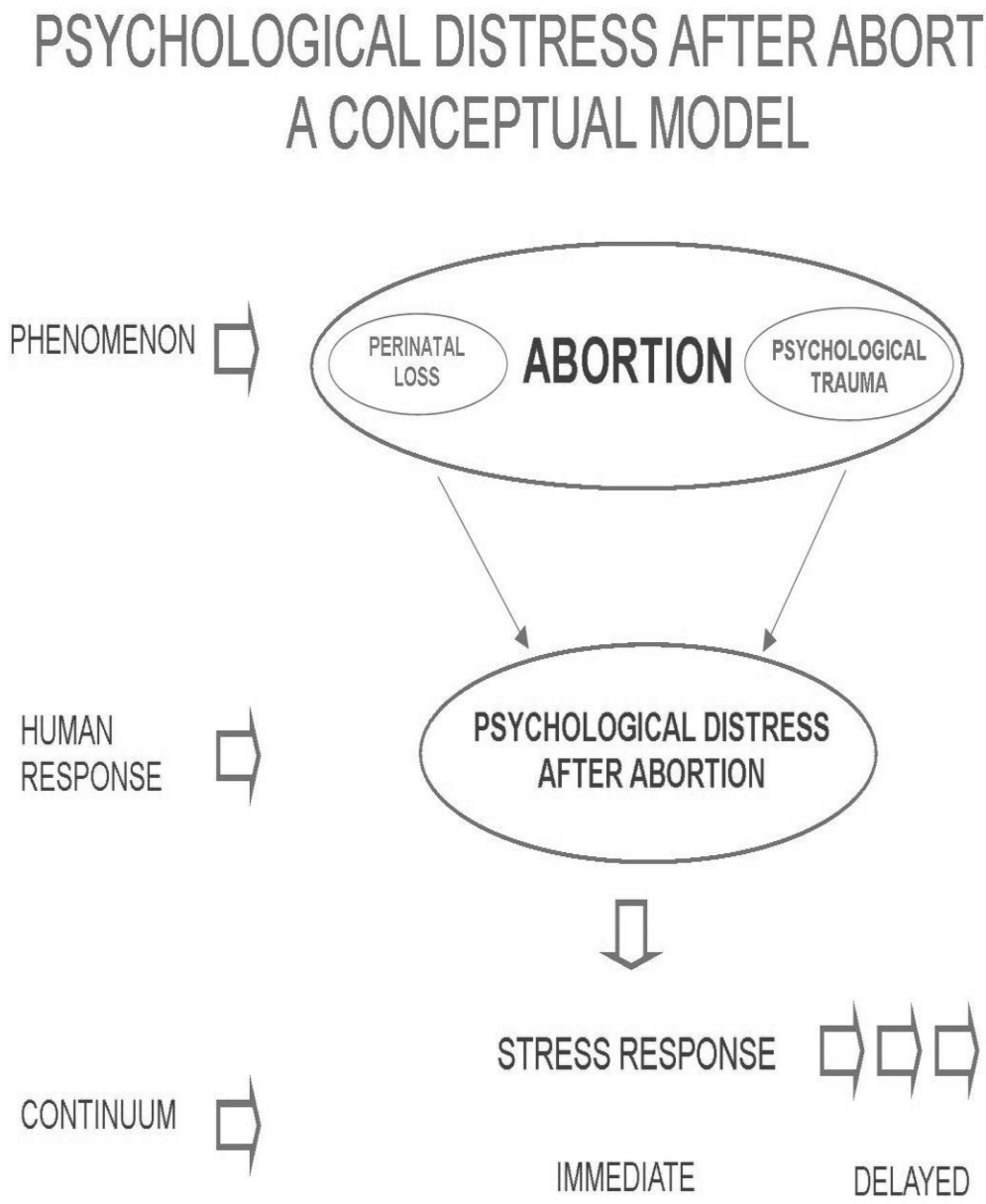
Conceptual Model for Psychological Distress After Abortion

In keeping with the thesis goal, maladaptive responses to abortion are described. Psychological distress after abortion used in this study is described as a synthesis of two concepts; psychological stress and perinatal loss. Emerging from the dominant concept of psychological stress, stress response symptoms include distressing cognitive and emotional recollections of the unwanted pregnancy and abortion events alternating with efforts to avoid these recollections resulting in maladaptive coping. Speckhard and Rue (1992) were the first to identify psychological stress reactions from abortion. They described intrusive symptoms of anxiety, sleep disruptions, difficulty concentrating, vivid images and pre-occupation with the pregnancy or abortion, and crying spells. In particular, similar to the guilt experienced from those who survive events where others do not, the authors attribute guilt experienced from abortion as a type of guilt from surviving where the fetus does not. Avoidant symptoms include denial, secrecy, or non-disclosure of the abortion to significant others, emotional numbing, and secondary substance abuse (Speckhard and Rue, 1992).

For the second concept, perinatal grief emerges as the human response to perinatal loss. Angelo (1992) describes perinatal grief after abortion as symptoms of depression, despair, hopelessness, complicated grief, and guilt. All symptoms impair overall level of functioning. Post abortion psychological distress emerges over a continuum of time ranging from immediate to delayed responses. In addition, post abortion psychological distress emerges across a spectrum of severity including mild, moderate, and severe symptoms of psychological distress. Interventions aim to reduce distress, alleviate symptoms, restore functioning, and prevent worsening of psychiatric morbidity, such as chronic psychological trauma or self-destructive tendencies. See Figure 1-2 Conceptual Model for Psychological Distress After Abortion below.

Figure 1-2. Conceptual Model for Psychological Distress After Abortion

The phenomenon of psychological distress after abortion is conceptualized as a synthesis of psychological stress or trauma and perinatal loss. Human responses to abortion can include the unresolved experiences of a stress response and perinatal grief. Psychological distress after abortion presents on a continuum of time from immediate to delayed responses. It presents within a range of intensity from mild to severe.



Theoretical Framework for Psychological Distress After Abortion

Psychological distress after abortion follows the course of stressful events. Stress responses occur in phases according to the theory of Stress Response Syndromes provided by Horowitz (1974; 2000). According to Horowitz, the hallmark feature of a stress response is the biphasic alternation of intrusive and avoidant symptoms. Horowitz defines a stressful life event as "one that is not fully in accord with a person's usual inner working models" (Horowitz, 2000, p. 119) and that threatens global functioning. The normal phases of experiencing stressful events include "outcry, denial, intrusion, working through and completion" (Horowitz 2000, p.163).

Horowitz (2000) identified abnormal stress responses that have not been worked through as stress syndromes which require professional treatment. Stress syndromes can include other disorders such as complicated grief. When distress is particularly intense or prolonged, then working through is blocked resulting in a syndrome of pathological behaviors. Stress syndromes include impairment in mood, thought, and behavior to stressful life events that diminish level of functioning.

Angelo (1992) and Speckhard and Rue (1992) applied Horowitz theory of stress responses to abortion. The current thesis uses a similar application but expands the theory to include the unintended pregnancy and the abortion as a two-fold experience of compounded stressful events. While this thesis used stress responses to illustrate responses of psychological distress after abortion, it does not propose 'post abortion syndrome" as a diagnostic criteria as does Speckhard and Rue (1992). See Table I-5 Phases of Psychological Stress Responses Adapted for Psychological Distress After Abortion.

For most single young college students, the threat of an unwanted pregnancy poses a life altering event. Pregnancies that disrupt a young woman's circumstances present a major conflict. The decision to abort signals the level of conflict associated with the circumstances of the pregnancy. Adapting the phases of a psychological stress response to abortion, the phases are as follows. The first stressful event is the news of pregnancy confirmation. Next, the outcry over the distress of the pregnancy follows. At the news of the pregnancy, young single women may experience symptoms of panic,

emotional numbing, and a sense of unreality. The experience of panic or emotional numbing during the outcry phase is pivotal to understanding psychological distress after abortion among this age group. Many young women make the decision to abort within this mental state. As a result, some decisions remain conflicted until resolved.

Next, the abortion occurs as the second stressful event. The outcry phase is heightened at the completion of the abortion. If the abortion experience is not intense or prolonged, then the normal phases of a stress response will progress through denial, intrusion, and working through until completion. If, however, the abortion experience is intense or prolonged, then abnormal phases of denial and intrusion will occur, resulting in a pathological response and completion will not be reached. Pathological responses of the denial phase consists of efforts to avoid confronting the abortion experience and manifests as negative coping such as substance abuse, depression, and high risk sexual or self-destructive behaviors. The denial phase alternates with the intrusive phase. The intrusive phase includes distressing memories, nightmares, and images associated with the pregnancy and abortion. Psychological distress after abortion can be understood as the unresolved conflicts posed by the crisis of the pregnancy and then, the abortion.

Table I-6 ***Phases of Psychological Distress After Abortion adapted from Stress Response Syndromes***

Normal Phases of Stress Response	Abnormal Phases of Stress Response	Pathological Behaviors of Psychological Distress	Pathological Behaviors of Psychological Post Abortion Distress
Event			
#1 News of Pregnancy			
#2 Experience of Abortion			
Outcry	Intense or prolonged	Panic, exhaustion	Panic, confusion, Emotional numbing Decides to Abort
Denial	Intense or prolonged	Pathological avoidance Depression, drugs, suicide	Pathological avoidance Depression, drugs, suicide
Intrusion	Intense or prolonged	Post- traumatic Stress Reactions	Post traumatic Stress
Working Through	Blocked	Maladaptive Coping	Maladaptive Coping
Completion	Not Reached	Personality Constriction	Impairment of Functioning

CHAPTER THREE
THE PRE-CLINICAL PHASE OF INTERVENTION DEVELOPMENT
(Continued)

Part Two: The Evidential Basis for Developing the Intervention

Preface to Manuscript Two

The second objective of the Pre-Clinical Phase was to provide an evidential basis for an intervention. While a preliminary model of treatment provided a general approach to treating psychological distress after abortion, it lacked evidence that was population-specific. Unanswered questions included: What are the target symptoms of the intervention? What is the nature of distress that the specified population experiences? How severe is psychological distress after abortion for this population? What are the determinants of distress? Is the distress related to the abortion or something else? Would young women access an intervention to address distress after abortion?

To answer these questions, a descriptive study using a cross sectional design was conducted during the Pre-Clinical Phase. The study generated evidence to be used in the subsequent phase of modeling the intervention. The Manuscript Two reported on the results of the cross sectional study within the Pre-Clinical Phase of intervention development.

MANUSCRIPT TWO

Characteristics of Psychological Distress after Abortion Among University Students

Maureen L. Curley, MS, APRN, B.C., PhD (Candidate)
Doctoral Candidate,
McGill University
Montreal, QUE

Celeste Johnston, N., D.Ed.
Emerita Professor
McGill University
Montreal, QUE

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ABSTRACT

Background

New evidence exposes an increase in the incidence and severity of psychological distress after abortion for a sub-population of women worldwide. Younger women are among the most vulnerable for mental health problems after abortion. Preliminary data suggest that interventions to relieve distress after abortion are effective, yet it is not known what interventions are effective for younger women. This study identified the target symptoms of psychological distress after abortion as a first step to develop interventions for university students after abortion.

Goal

The purpose of this study was to identify the characteristics and severity of psychological distress after abortion among university students. The study determined the target symptoms for an evidence-based intervention to relieve psychological distress after abortion among university students.

Methods

Two university student health services within Canada and the United States served as settings in this study. The study used an ex post facto cross sectional design to compare psychological outcome among three groups: (a) participants who reported distress after abortion and who would have preferred treatment if treatment were available (*Abortion Treatment Preferring*), (b) participants who reported no distress after abortion and did not prefer treatment (*Abortion No-Treatment Preferring*), and (c) *Control* participants who were never pregnant *(No Abortion No-Treatment Preferring*). All participants completed measures for psychological health. Those who had an abortion reported psychological outcomes of the abortion, specifically the Impact of Event and Perinatal Grief. They also reported whether they desired follow up services at the time of the interview.

Results

The sample consisted of N=151 participants, including n=48 *Abortion Treatment Preferring,* n=41 *Abortion No Treatment Preferring*, and n=62 *Controls*. Among those who had an abortion (n=89), all obtained it under 25 years of age. Descriptive statistics and MANCOVA were used to analyze outcome among groups. Other than younger age in the control group, no significant demographic differences between groups were found. The *Abortion Treatment Preferring* group showed more depression than the *Abortion No Treatment Preferring* and *Control* groups. The *Abortion Treatment Preferring* group also showed significantly higher Impact of Event Scale (IES) and the Perinatal Grief Scale (PGS) scores than the *Abortion No Treatment Preferring group*. The IES and PGS scores for the *Abortion Treatment Preferring* group remained significant after adjusting for co-occurring psychopathology, age, time since abortion, and multiple abortions.

Significance and Conclusions

Psychological distress after abortion was characterized by mild depression, moderate to severe psychological stress reaction and grief that was specific to the abortion and unplanned pregnancy. Some women preferred services after abortion which is currently not offered. The data provided evidence for target symptoms to design interventions to relieve psychological distress after abortion.

Introduction

Approximately 42 million women worldwide between the ages of 15 and 44 years have legal, induced abortions each year. Abortion rates are the highest worldwide for women ages 20-24 years (United Nations, 2007). Within some developed countries, abortion rates for this age group are estimated to be 53 abortions per 1000 women in the United States, 36.9 abortions per 1000 women in Australia, and 31.5 abortions per 1000 women in Canada. Countries with higher abortion rates typically have less restricted abortion policies. Restrictions on abortion vary according to gestational length of pregnancy, compulsory counseling, parental notification, and indications for abortion (United Nations, 2002 and 2007). Indications for abortion include the preservation of physical health such as to save the life of the mother and the preservation of mental health such as preventing the stress incurred from continuing the pregnancy or withholding the abortion. Younger women choose abortion for mental health reasons in order to relieve the stress associated with continuing an unwanted pregnancy (United Nations, 2002). This is significant because although young women who choose abortion have higher rates of education, employment, and income when compared to those who deliver (Fergusson et al., 2006), they conversely have worse mental health (Broen et al., 2006; Fergusson et al., 2006) and substance use (Reardon, Coleman, and Cougle, 2004) outcomes following abortion.

Estimates of the incidence of adverse outcomes after abortion for younger women range from 20% (Major et al., 2000) to up to 46% (Mulfel et al., 2002). Approximately 10% (Coleman et al., 2002; Adler, 1989; Lodle et al., 1985; Ekblad, 1955) to over 30% of women report severe distress that does not remit over time (Bradshaw and Slade, 2003). These estimates are higher than psychological distress after other types of reproductive events such as postpartum psychiatric disorders. For example, O'Hara (1996) estimates 10% to 15% of women experience postpartum depressive disorders and 1% experience postpartum psychotic disorders. Similar biological, psychological, and social risk factors for psychiatric sequelae after exposure to all types of pregnancy outcome may exist

Younger women have the highest rate of repeated abortions of up to 40% (United Nations, 2002). Repeated abortions occur for a variety of reasons including as a means of contraception, as well as the potential re-enactment of unresolved post abortion distress. The World Health Organization recognizes the problem of repeated pregnancy and repeated abortion within this age group and the need for effective interventions (WHO, 2003). Preliminary reports suggest that interventions to reduce psychological distress after abortion are effective (Angelo, 1992; Burke and Reardon, 2002; Gray and Lassance, 2003; Ney, 1994; Shapiro, 1993).

In summary, due to the large incidence of worldwide abortion, evidence suggests that a significant number of young women experience psychological distress after abortion. An estimate of 30% (adjusting for repeated abortion rates) accounts for at least 30,000 women per year in Canada and almost 300,000 women per year in the United States are at risk for negative abortion sequelae. Since this incidence parallels if not exceeds the incidence of postpartum psychological distress, similar attention needs to focus on this presently unrecognized public health problem.

Given that current evidence for the population at the highest risk after abortion is lacking, this study aimed to provide data including the following: (a) to describe the target symptoms of psychological distress after abortion among younger women, (b) to identify the determinants of the target symptoms, such as whether distress is associated with factors related to the unintended pregnancy and abortion experience, factors elated to pre-existing mental health problems, factors related to underdeveloped coping skills, or factors which have not yet been identified, and (c) to identify whether target symptoms psychological distress are modifiable to interventions, and finally (d) to determine whether psychological distress after abortion among young women is severe enough to require intervention or whether distress remits over time.

Literature Review of Populations at Risk

Women under twenty-five years of age are the most vulnerable to develop psychological distress after abortion for a variety of reasons. First, young women primarily choose abortion to relieve the psychological stress of an unintended

pregnancy (United Nations, 2002). Yet, this population paradoxically reports the highest incidence of psychological distress afterwards. While some claim that the severity of psychological distress *after* abortion results from the severity of psychological problems *before* the abortion (Mota et al., 2010; Robinson et al., 2009), as opposed to the abortion itself, this generalization may not apply to younger women. Instead, younger women experience distress after abortion due to the number of risk factors inherent in their developmental stage as well as to the circumstances associated with the unwanted pregnancy and the abortion. Factors that predict psychological distress after abortion within this age group include single status, lack of social support (David, Rasmussen, and Holdt, 1981), concealment of the unwanted pregnancy and abortion from significant others such as parents, younger age (Franz & Reardon, 1992), pressure from others to abort the unwanted pregnancy (Williams, 2000), and the natural emotional immaturity of their undeveloped coping skills (Mulfel, 2000). Mulfel (2000) described the emotional immaturity related to abortion decision-making within younger women as a sense of omnipotence, impulsive decision-making, and concrete thinking that minimizes how they may feel after abortion.

Wheeler and Austin (2001) examined responses to early abortion at less than twenty weeks gestation among adolescents and young adults. Finding higher grief, depression and behavioral problems as compared to never pregnant and pregnant controls, the authors concluded that young women can experience significant impairment from even early pregnancy losses. If unresolved, psychological impairment as a result of abortion increases risks for psychiatric morbidity, repeat pregnancy (Horowitz 1978) and repeat abortion (Speckhard and Rue, 1992).

Second, younger women are at a higher risk for negative abortion sequelae because they have the highest incidence of *repeated abortions* (Alan Guttmacher Institute, 1999). Repeated abortion can occur as the result of using abortion as a means of contraception, as well as reflect an unresolved conflict associated with a previous abortion. Interventions have the potential to reduce the incidence of repeat abortion by addressing these conflicts. The incidence of repeat abortions is similar within Canada and the United States based on data up to 2006. In Canada, women between the ages of 15-44 years abort at a rate of 15 abortions per 1000 women, the majority of these are

single women between the ages of 20-24 years (Statistics Canada, 2010), and 30% are repeated abortions (Statistics Canada, 2000). Similarly, in the United States, women ages 15-44 years abort at a rate of approximately 24 abortions per 1000 women, the majority of these women are single, ages 20-24 years, and approximately 40% are repeated abortions (Morbidity and Mortality Weekly Report, 2010).

A third factor posing a higher risk for psychological distress after abortion among young women stems from the onset of the reproductive phase of the lifespan. This developmental phase poses greater biological vulnerability to mood and anxiety disorders for young women as compared to adult women, particularly surrounding reproductive events. Undergoing an abortion during this phase may compound existing risks for abortion. Surprisingly, no data examining the impact of abortion on hormonal processes or on neurobiological processes across the lifespan were found.

As one of the first to examine the impact of abortion for psychiatric reasons, Ekblad (1955) interviewed a sample of 479 Scandinavian women between the ages of 21-25 years and found that over 30% reported negative sequelae. Further, 35% of the sample experienced a repeated pregnancy within the following two years. His findings were consistent with others for a rate of relationship failure as high as 70%. He identified factors of pre-morbid psychopathology, coercion to abort, and history of early adverse life events as risk factors for developing post abortion distress.

Despite decades of legalization, social acceptability, and access to abortion services, these statistics and risk factors such as a rate of failure in relationships as high as 70%, coercion to abort, self blame, and repeated pregnancy are the same today as they were in 1955. This finding suggests that independent of time and culture, there may be sub-populations of women who are more vulnerable to distress than others and may not benefit from abortion. Moreover, abortion may not solve the problem of a crisis pregnancy for about 30% of women that have repetitive abortions. Further, the fact that the rates of abortion distress within population of women having abortions have either remained constant or increased for almost fifty years underscores the surprising lack of attention paid to this problem.

Adding to this growing body of evidence, several recent epidemiological studies found similar outcomes for younger women within international samples. Among

Scandinavian women, Pedersen (2008) examined the relationship between induced abortion and subsequent depression among young women. In a representative sample of over 700 women ages 15 to 27 years, the author longitudinally examined rates of depression using standard measures over an eleven year period. After controlling for an extensive number of confounders associated with both depression and abortion including socio-demographic, behavioral, and familial variables, the author found that those who had an abortion in their twenties had a significantly higher rate of subsequent depression than those who delivered (OR 2.9; 95% CI1.7-5.6). In a birth cohort of 1223 Australian women at twenty-one years of age, Dingle and Alati (2008) examined lifetime psychiatric and substance use disorders after all types of pregnancy loss, including abortion and miscarriage as compared to birth. They found that women who had aborted a pregnancy reported a two times higher lifetime prevalence of alcohol abuse (OR= 2.1; 95% CI 1.3-3.5) and depression (OR=1.9 CI 95% 1.1-3.1) when compared to those who delivered a pregnancy.

In conclusion, a critical gap exists between research and practice in the recognition and treatment of psychological distress after abortion Moreover, the mounting evidence of negative effects of abortion for some women is cause for considerable concern. Studies for the most vulnerable populations need to be prioritized. To date, there are few data that characterize the nature of psychological distress after abortion within this population. Thus far, it appears that younger women have different needs for intervention than adult women who experience psychological distress after abortion. Specifically, these needs are not known as no such studies were found. The nature of distress must be defined in order to develop targeted interventions.

Purpose

Research Goals, Hypotheses, Questions

The purpose of this study was to identify the severity and characteristics of psychological distress after abortion among a university population

Objectives:

a. To determine the characteristics and severity of psychological distress among young women who preferred treatment after abortion (*Abortion Treatment–Preferring Group*) as compared to young women who preferred no treatment after abortion (*Abortion No Treatment Preferring Group*) and young women who were never pregnant (*No Abortion No Treatment Preferring Control Group*)

b. To identify determinants of psychological distress after abortion that may be amenable to intervention among young women who report distress and seek treatment after abortion

Hypotheses

a. *Characteristics.* Psychological distress after abortion will be characterized by higher scores for depression on the Beck Depression Inventory (BDI) and higher scores for anxiety on the State-Trait Anxiety Inventory (STAI), particularly STATE scores among those who preferred treatment after abortion as compared to those who preferred no treatment after abortion and never pregnant controls.

b. *Severity.* Psychological distress after abortion will be more severe among participants who preferred treatment after abortion as compared to those who preferred no treatment as evidenced by higher scores on the Impact of Event Scale (IES) and higher scores on the Perinatal Grief Scale (PGS).

c. *Covariates of Age, Number Abortions, and Length of Time Post Abortion,* Age, number of abortion, and length of time post abortion will be significant covariates between the abortion groups. Younger age, a greater number of abortions, and less time post abortion will be associated with participants who preferred treatment as compared to those who preferred no treatment.

d. *Determinants.* There will be determinants of psychological distress after abortion associated with the pregnancy and abortion experience that are amenable to intervention.

Research Questions

What are the characteristics, severity, and determinants of psychological distress after abortion among a college population?

a. What were the characteristics of psychological distress after abortion among a college population? (*Characteristics among Three Groups)*

b. Was psychological distress after abortion higher among participants who preferred a treatment after abortion as compared to participants who preferred no treatment after abortion? (*Severity between Two Abortion Groups)*

c. For participants who preferred treatment after abortion, was there a difference in age, length of time post abortion, or number of previous abortions as compared to those who preferred no treatment after abortion? (*Covariates between Two Abortion Groups)*

d. Were there determinants of psychological distress after abortion associated with the pregnancy and abortion experience that may be amenable to intervention? *(Determinants between Two Abortion Groups)*

Methods

Design

This study used an ex post facto descriptive design to describe, analyze, and compare determinants of psychological distress after abortion among a three-group cohort. The groups included: (a) participants who had an abortion, reported post abortion distress, and desired support if available **(***Abortion Treatment Preferring Group*), (b) participants who had an abortion, reported no post abortion distress and did not prefer services if available (*Abortion No Treatment Preferring Group)*, and (c) participants who had never been pregnant nor had an abortion, nor desire support (*No Abortion, No Treatment Preferring Control Group*).

Sample

A convenience sample of self-selected college students was recruited. Inclusion criteria were (a) English speaking, (b) enrolled as university student at time of interview, (c) never- married and non-childbearing, and (d) self-reported post-abortion distress, self-reported no post abortion distress, or never pregnant. In addition, for the two abortion groups the inclusion criteria were: (e) a past induced legal and voluntary abortion not for congenital anomaly, or fetal reduction, (f) no other major stressful life event since the abortion and (g) able to complete data concerning abortion experience without undue distress.

This age group was chosen for several reasons. First, due to younger age, a college population represented a high incidence of exposure to induced abortion. The population also included a large number of risk factors for distress after abortion such as single status (David et al., 1981), younger age (Franz & Reardon, 1992), concealment from significant others (Major and Granzow, 1999), and maladaptive coping skills due to developmental stage (Mulfel et al., 2000). Second, the self-selected sample could potentially benefit from intervention that would otherwise not be offered to them. Finally, college students represented a homogeneous population concerning

demographic variables such as age, educational level, socio-economic status, level of intelligence, and marital status. Since the sample included participants within Canada and the United States, it was expected to be more heterogeneous concerning variables of culture, ethnicity, and politics of abortion. A sample from two countries had the potential to enhance generalizability of findings if no differences were found between Canadian and American participants on the outcomes of interest. In addition, abortion services in North America are less restricted, medically safer, and more accessible than other less developed countries. Consequently, psychological distress after abortion may be less influenced by extraneous factors such as restriction, social stigma, or medical complication. Rather, assumptions for psychological distress after abortion were limited to the risk factors consistent with the theoretical framework. As such, a sample of college students within North America represented an ideal population to study determinants of psychological distress after abortion.

Sample Size

Considerations for sample size were calculated according to homogeneity of the sample (Polit & Hungler, 1991) and recommendation for a three group MANCOVA (Stevens, 1996). The sample size was determined for a three-group MANCOVA at a power of 0.80 and a level of significance of 0.05 for analyzing two to four variables. This estimate accounted for analyzing two variables for the control group, including depression and anxiety, and four variables for the abortion groups, including depression, anxiety, psychological stress, and perinatal grief. Thus, for two to four variables, in order to detect a medium effect size (*d=0.75*), 44 to 56 participants per group were required, or approximately 50 per group. For the same number of variables, in order to detect a large effect size (*d=1.0*.), 26 to 33 participants per group were required, or approximately 30 per group**.** The final sample totaled N=151 participants, including n= 89 who had obtained an abortion. The groups included n= 48 participants in the *Abortion Treatment Preferring group* (GROUP1), n=41 participants in the

Abortion No Treatment Preferring group (GROUP 2), and n=61 participants in the *Control* group (GROUP 3).

Study Sites

The study was a multi-site international one. Participants were recruited from three student university health centers McGill University, Concordia University, and the University of Vermont. The McGill University Health Center served as a primary study site, and the University of Vermont was the second study site. While the standard of care for psychological distress after abortion included supportive care, all health center staff recognized this was inadequate to address the unique needs of this population (Tellier, 2003; Moffatt, 2003, Martman-Moe, 2004; Drew, 2008). The three centers reported that students mostly referred themselves for abortions to general hospitals and abortion clinics within the local areas. Thus, the number of students obtaining abortions at each site was not known. Estimates were calculated according to student population. Whereas McGill has approximately 30,000 students and approximately half (15,000) are women, estimating an abortion rate of about 31/1000, totals (31 X 15) approximately 450 abortions per year. Over a four year program of study, this yields an estimate of 1800 potential participants. If approximately 30% report psychological distress after abortion, then potentially 540 students were eligible for the study. In contrast, the University of Vermont student health services reported only approximately 6 students per year presenting for post-abortion psychological support (Martmann-Moe, 2004). Yet, similar to McGill, the exact number of abortions was underestimated as most abortions were not reported.

Measures

Standard psychological instruments were used to collect psychological outcome among all groups. All measures were well validated, used for other studies of university populations, and used in studies of psychological outcome after abortion. Measures were chosen to evaluate symptoms of psychological distress among university students. For this study, psychological distress included symptoms of depression, anxiety, stress, and grief. These target symptoms were based on recommendations for evaluating stressful responses from the International Consensus Group on Depression and Anxiety (Ballenger 2004). They suggested that studies evaluate broader symptoms of stress and trauma such as mood and anxiety symptoms. As such, symptoms of depression or anxiety may occur co-morbidly with a stress response. Alternatively, symptoms of depression may present within perinatal grief and symptoms of anxiety may present with a stress response. Since co-existing mental health conditions may confound outcome, a measure to control for co-existing psychopathology was used. The instruments included The Beck Depression Inventory, The State-Trait Anxiety Inventory, The Impact of Event Scale, the Perinatal Grief Scale, and the Brief Symptom Inventory.

In addition, questionnaires were developed which collected demographic, health, and reproductive history information. The Reproductive History Questionnaire collected data associated with the pregnancy and abortion experience. These data included determinants such as whether participants experienced medical complications with the abortion, whether they received pre- or post abortion counseling, etc. that may have contributed to differences among those who sought treatment after abortion.

The Beck Depression Inventory (BDI)

The Beck Depression Inventory is a well established assessment of depression ithin a psychiatric population. The scale originated in 1961 by Beck and colleagues and has undergone several revisions to parallel the DSM-IV symptom criteria for depressive episodes. The more recent scale is referred to as the BDI-II and has a correlation of r=.94 with the original among a college population (Lightfoot & Oliver, 1985). The scale is a 21-item self-administered symptom inventory derived from observations of depressed patients (Beck, Ward, and Mendelson, 1961). Item content includes subjective reports of emotional states, behaviors, and somatic symptoms (Bowling, 2001). Some of these include sadness, failure, suicidal ideation, agitation, self-loathing, guilt, and pessimism, as well as vegetative symptoms of depression such as loss of interest in sex, appetite changes, fatigue, etc.. Items are rated in intensity as experienced over the past two- week interval from 0 meaning absent, to 3 meaning severe. Scoring indicates levels of depression ranging from a score of 0-63 indicating minimal depression, less than 10, mild to moderate depression, 10 to 18, moderate to severe depression, 19 to 29, and severe depression, over 30 (Beck et al., 1961). The BDI has had extensive evaluation of reliability and validity. A meta-analysis of by Beck and colleagues (1988) showed an internal consistency range from .73 to .92 with a mean alpha coefficient of .86 for psychiatric samples and similar results for non-psychiatric samples, 0.81. At one week, test-re-test reliability yielded a Pearson coefficient of 0.93 (Beck et al., 1996). Content validity has been obtained according to DSM-IV criteria for depression. Concurrent validity is highly correlated but not redundant with other types of depression scales, such as the Hamilton Psychiatric Rating Scale 0.71 (Groth-Marnat, 2003). The BDI has often been considered the gold standard itself against which other scales are compared. Factor analysis show a pattern of three underlying structures of somatic, self-negating, and functional impairment within a college (Beck et al., 1996) and adolescent population (Steer, Kumar, Ranieri, & Beck, 1998).

Major and colleagues (1990) used the short form of the BDI shortly after an abortion procedure. Results indicate that most of the sample, (85%) was minimally or mildly depressed and 15% were moderately to severely depressed. Measures were not

taken at another point in time. Scores indicative of minimal depression shortly after the abortion may be more representative of relief. Responses may change over time.

State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI: Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983)) is one of the most frequently used anxiety scales on research on clinical samples with use in over 8000 studies (Groth-Marmat, 2003) The STAI is a two dimensional 20-item self-administered questionnaire developed to evaluate both transitory (state) and persistent (traits) of anxiety. The scale was developed from pooled items from other anxiety scales, tested for consistency, and evaluated on college students (Bowling, 2001). Items are divided into 20 state- anxiety items and 20 trait-anxiety items. State-anxiety items are rated from 0-4 according to intensity. Trait-anxiety items are rated from 0-4 according to frequency. Scores for each sub-scale range from 20-80 with higher scores indicative of greater anxiety. Scores are summed. Interpretations include high state anxiety, high trait anxiety, high state-low trait anxiety, and high trait-low state anxiety. Reliability for the STAI shows high internal consistency with alpha coefficients reported at r=.90 for trait anxiety and r= .93 for state anxiety for a student population. Test-re-test reliability at one and two month intervals within a college population showed greater stability (> .70) for trait anxiety and less (.36 to.51) (Spielberger et al., 1983) for state anxiety, which is a less stable condition. Content validity is determined by the scale‘s consistency with five of the eight domains for the DSM-IV diagnostic criteria for generalized anxiety disorder. While trait items have high correlations with other anxiety scales, state items were chosen in order to reflect high stress experiences. Hence, the scale should be able to differentiate characteristic anxiety from anxiety associated with the stress of abortion. Construct validity is supported by the fact that healthy populations demonstrate lower scores on trait anxiety than do psychiatric populations. Concurrent validity has been supported by correlations ranging above .70 for similar anxiety scales such as the Manifest Anxiety Scale and the Anxiety Scale Questionnaire. (Spielberger et al., 1983). Factor analysis showed less distinct discrimination between the two constructs of state

and trait anxiety. Nevertheless loadings were consistent with anxiety and negative affect (Groth-Marmat 2003).

The STAI has been used to assess anxiety in samples both immediately prior to and after abortion (Wells, 1991; Wells, 1992). Miller et al (1998) found the highest scores were for state anxiety before abortion and decreased after two weeks for most subjects. However, he noted that for some, anxiety remained high even at two weeks.

The Brief Symptom Inventory (BSI)

The Brief Symptom Inventory (Derogatis 1993) was developed as a continuous measure from the Symptom Check-List-90 (SCL-90) in an effort to create a more time-efficient instrument for both psychiatric and community samples. The scale includes the nine domains that reflected the highest factor loadings taken from the original symptom domains of the SCL-90. The domains include symptom categories of depression, anxiety, somatic symptoms, obsessive-compulsive tendencies, interpersonal sensitivity, phobias, hostility, psychosis, and paranoid ideation. The scale is a 53-item symptom inventory based on self-report over the past seven days. Scoring includes rating of each item on a Likert scale from 0-5, indicating "not at all" to "extremely". Scores for each symptom domain are summed, divided by the number of items endorsed, and converted to standardized scores. The summed scores indicate global indices of Positive Symptom Distress Index, Global Severity Index and Positive Symptom Total. For this study the Positive Symptom of Distress Index (PSDI) was used which indicates the average level of distress or overall distress that a respondent experiences. The PSDI score is obtained by summing all non-zero responses and then dividing by the Positive Symptom Total.

The reliability of the BSI has been reported by the authors in a sample of 719 psychiatric patients. Internal consistency coefficients on each of the symptom domains range from 0.71 to 0.85 indicating moderate to high correlations using Cronbach's alpha. In addition, test-retest reliability for a sample of n= 60 non- psychiatric subjects within a two-week interval yielded coefficients ranging from 0.78-0.90 (Bowling 1996). Concurrent validity has been demonstrated between the BSI and the MMPI in a

sample of 209 volunteers for correlations ranging from 0. 30 to .72 (Derogatis, 1993). The BSI has been used to measure baseline psychopathology for distressed populations within nursing studies (Grossman et al 2000).

The Impact of Event Scale (IES)

The Impact of Event Scale is a continuous measure used in this study to measure the impact of the stress associated with abortion not necessarily to meet the Diagnostic and Statistical Manual of Mental Disorders IV Text Revised DSM-IV TR (American Psychiatric Association, 2000) diagnostic criteria of Post Traumatic Stress Disorder (PTSD). The IES was developed by Horowitz, Wilner and Alvarez (1979) in order to measure psychological symptoms associated with a stressful event. The IES can be referenced to any specific life event. The scale taps the two main domains or reported experiences in response to a stressful event, intrusive phenomena (ideas, flashbacks, images nightmares, associated feelings) and avoidant phenomena (attempts to avoid stimuli, feelings, or circumstances associated with the event). For purposes of this study, the referent was the abortion event. The IES evaluates the severity of response to a stressful event by rating how frequently intrusive or avoidant phenomena occurred within the past 7 days. Items are scored within each of the two sub-scales according to frequency of responses from 0, "not at all" to 5, "often". The range of scores for the intrusive sub-scale is 0 to 35 and the range of scores for the avoidant sub-scale is 0 to 40. A summed score of 26 and above indicates moderate to severe distress (Fischer& Corcoran, 1994). The authors have reported on the psychometric properties of the IES. Properties of reliability are based on two separate samples demonstrating good internal consistency of both sub-scales with coefficients ranging from .79 to .92. In addition, properties of known- group validity have been established by differentiating out-patient samples seeking bereavement treatment (Fischer & Corcoran 1994). The IES has been used in studies assessing stressful events associated with pregnancy outcome, such as abortion (Congleton & Calhoun, 1983; Cohen & Roth, 1984; Salvesen et al., 1997; Mulfel, 2002), perinatal loss (Hunfield & Passchier, 1997; Salvesen et al., 1997), and childbirth (Skari et al., 2002; Ryding et al., 2002). The IES

has been used to assess short-term abortion response such as one- week post abortion (Cohen and Roth, 1984) as well as long-term post abortion response (Barnard, 1990). Barnard found that within a sample of n= 80 women who were 3-5 years post abortion, 46% reported moderate to high post abortion measures of stress on the IES.

The Perinatal Grief Scale (PGS)

The Perinatal Grief Scale (PGS) developed by Potvin, Lasker, and Toedter (1989) is a continuous measure developed specific to pregnancy -related losses. The scale is a 33-item revised and shorter version of the original 84-item scale including 3 sub-scales of" Active Grief," "Difficulty Coping", and "Despair". The PGS has been used for all types of pregnancy loss including early and late pregnancy loss (Toedter, Lasker & Janssen, 2001) as well as abortion (Coyle & Enright, 1997). A meta-analysis of over twenty-one studies using the PGS during the past ten years for over 1500 bereaved women and men showed little difference in scores between early and late pregnancy loss. Total scores on all three sub-scales showed 95% of subjects scored between 78 and 91, the latter indicative of high grief. Mean scores on sub-scale included "Active Grief= 32. 4, "Difficulty Coping" = 26.5, and "Despair" = 23.7. Each scale is scored from 11 to 55 or a total summed score can be used ranging from 33-165 with higher scores reflecting more intense grief. A total summed score of 90 indicates severe psychopathology.

The same factor structure of the original scale was retained while inter-item correlations were analyzed and those with low correlations systematically reduced to produce the new version. The scale measures the severity of grief that progresses with each sub-scale. For example, the scale addresses symptoms of acute grief in the first sub-scale and ends with symptoms of chronic grief in the third sub-scale. The authors note that the scale has been used for losses including fetal death and at all stages of pregnancy. Within a sample of n= 138, women who had experienced perinatal loss within one month were assessed via the scale. The sample represented a wide range of socio-economic strata. Psychometric properties of the scale in this study include

reliability assessed by Cronbach's alpha for scale as a whole = .95 with average inter-item correlation of .40. Each respective subscale demonstrate values >.85 Active Grief= .92, Difficulty Coping= .91, and Despair = .86. Factor analyses via Varimax rotation result in the 3 factors account for 49.8 % of the total variance. Sub-scale variance accounts for 19.5%, 18.2% and 12.1% respectively. Eigenvalues > 1 for each of the sub-scales were obtained with scores of 5.996, 4.002 and 6.445 respectively. Test-re-test reliability was conducted on the sample between 12 and 15 months after first testing. Correlations scores between the two tests ranged from moderate correlations of .59 to .66 and at p <.001 level of significance. Concurrent validity for the PGS was compared to depression via the Symptom Checklist (Derogatis, Rickels, and Rock, 1976) and demonstrated moderate to high correlation of r= .785 as grief shares similar but not redundant attributes with depression**.** For this study, the scale was modified for sensitivity for women after abortion resulting in substituting the word "pregnancy" for "baby**",** and including when the pregnancy "ended". In addition, the total summed score for the three sub-scales was used.

Recruitment

This study received initial, annual, and interim approval from the Institutional Review Board at McGill University from 2005 through 2011. The study was also approved by the advisory boards of the student health services at both McGill University in 2005 and the University of Vermont in 2008. Further, the study was approved by the director of the student health services of Concordia University to refer students to participate in the study at the McGill site. For recruitment, the Principal Investigator (PI) conducted a comprehensive educational effort within each student health services. In addition, the PI contacted mental health providers at each site who would be available to refer study participants who desired or required immediate attention to address their experience. Each site indentified a contact person for any concern with the study, and none arose.

Participants were recruited from posted bulletins, online classified, and campus newspaper advertisements with email contact information or from university health service providers. Participants self-identified their abortion status or never pregnant. Most contacted the PI via email address. Some were referred by trained university health service staff. Once the PI received a secure email inquiry, then the participant was contacted and screened for eligibility by phone or email. Participants who met the inclusion criteria were scheduled for an interview. Those who did not meet the inclusion criteria, and wanted services after abortion were referred to mental health providers at the university health services or to the Center for Reproductive Loss in Montreal, where referrals had been arranged. Several extra participants were included in the control groups from the University of Vermont as a larger sample size from that site was expected.

Group Classification

At the time of the interview, participants who had experienced an abortion were classified into one of two groups: the *Abortion Treatment Preferring group* (GROUP 1) or the *Abortion No Treatment Preferring* group (GROUP 2). The *Abortion Treatment Preferring* group included those who self-described psychological distress after abortion that was significant enough to want services to relieve it. This was regardless of when the abortion occurred. Criteria for significant distress was based on the literature and recognized the fact that while emotional distress after abortion for many diminishes over time, others experience distress that may persist, partially remit, or worsen over time. Most of the *Abortion Treatment Preferring* group readily classified themselves. Two or three participants were undecided, but chose the *Abortion Treatment Preferring* group when asked if they wanted services.

Participants in the *Abortion No Treatment Preferring* group included those who self-reported no psychological distress after abortion and did not want services. All *Abortion No-Treatment Preferring* participants readily classified themselves into that group. Some of the *Abortion No Treatment Preferring* group reported experiencing significant distress after the abortion and would have wanted services at that time, and that distress diminished over time.

Whereas the goal of this study was to target symptoms in order to develop an intervention to relieve distress after abortion for those that wanted help after abortion, the validity of group classification was based on the preference for services as opposed to no preference for services, rather than on the severity of level of distress. This classification strategy had the potential to minimize the differences between groups on level of distress.

Procedure

1. Participants were interviewed by the PI or trained staff nurse in a private office at the student health services. Each participant was classified into one of three groups. The risks and benefits were explained and the consent form was signed.

2. For those who experienced an abortion, the explanation of risks included that some instruments may provoke distressing feelings about the abortion. Each was asked to identify a support person who was available to them after the interview.

3. Participants who had experienced abortions were informed that intervention services would not be available in the near future, but potentially at a later date, and were asked if they would like to be contacted. Those who desired services at the time of the interview were referred to mental health and counseling service staff.

4. Participants were given a study identification number to complete the questionnaires and required to submit a secure email address and phone number.

5. All participants completed the Demographic Questionnaire I, General Health Questionnaire II, the Brief Symptom Inventory (BSI), the State-Trait Anxiety Inventory (STAI), and the Beck Depression Inventory (BDI).

6. In addition, those who had an abortion completed the Impact of Event Scale, the Perinatal Grief Scale, and the Reproductive History Questionnaire.

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7. The PI reviewed completed measures for all participants before ending the interview. The Beck Depression Inventory was screened for either a total score > 16 indicative of moderate depression or for the endorsement of suicidal ideation. Participants who scored positively were further evaluated and referred for follow up.

Variables

The independent variable was status of preferring treatment for psychological distress after abortion: (a) *Abortion Treatment Preferring,* (b) *Abortion No Treatment Preferring*, and (c) *No Abortion No Treatment Preferring* control participants. See Table II-1 Variables below.

The dependent variable was psychological distress, the primary outcome of interest. Psychological distress after abortion was operationalized to include variables of depression (BDI), anxiety (STAI), a stress response (IES), and perinatal grief (PGS). In addition, the Reproductive History Questionnaire described potential determinants of distress associated with the pregnancy and abortion, such as whether a participant received pre- or post abortion counseling, satisfaction with support, etc. Determinants that were amenable to intervention were identified. The BDI and STAI targeted the symptoms of depression and anxiety which are related to the constructs of both stress and grief. Symptoms of depression and anxiety may co-occur with a stress response as well as with perinatal grief. Alternatively, symptoms of depression and anxiety may occur independent of the symptoms associated with the pregnancy or abortion.

Covariates were identified in the literature as that of age, (Franz & Reardon, 1992; Major et al., 2000), number of previous abortions (Freeman, 1980), length of time since exposure to event (Sundin and Horowitz, 2003), and pre-existing psychopathology that occurred prior to the abortion experience (Robinson et al., 2009). Age was controlled by restriction to a sample of college aged women ranging from 18 to 35 years. Given the wide sample age range, age was statically controlled as a covariate. Numbers of previous abortions were statistically controlled as a covariate. Length of time since abortion was statistically controlled as a covariate. While pre-existing psychopathology could not be controlled in this study, participants self reported the number of existing mental health problems. These were summed and tested for differences among the three groups. Co-existing psychopathology (PBSI) was measured as a covariate.

Table II-1 Variables for Descriptive Study

Variable	Definition	Type	Scale
Independent Variable	ABORTION, TREATMENT PREFERRING	Exposure	Discrete
Three Levels	ABORTION, NO TREATMENT PREFERRING		
	NO ABORTION, NO TREATMENT PREFERRING		
Dependent Variables	Psychological Distress After Abortion		
Depression	Elevated scores on the BDI	Outcome	Continuous
Anxiety	Elevated scores on the STATE Elevated scores on TRAIT	Outcome	Continuous
Stress Response	Elevated scores on IES	Outcome	Continuous
Perinatal Grief	Elevated Scores on the PGS	Outcome	Continuous
Covariates Variables			
Number of Abortions	Either 1 or >1	Confounder	Categorical Statistically Control
Time since Abortion	Number of Months from abortion to interview	Confounder	Continuous Statistically Control
Age	18-35 years	Confounder	Continuous Statistically Control
Co-existing Psychopathology	Positive Symptom Index Sub-scale of BSI	Confounder	Continuous Statistically Control

For this study, co-existing psychopathology (PBSI) was measured as a covariate rather than an outcome. Co-existing psychopathology included psychological symptoms that were present in addition to the psychological distress associated with the abortion. Co-existing psychopathology was measured separately in order to adjust for psychological symptoms that were not related to the pregnancy or abortion. The aim of this study was to target specific rather than general symptoms of distress in order to guide developing interventions. General symptoms of distress such as mood and anxiety disorders were assessed by the BDI and the STAI, whereas more specific symptoms were captured by the IES and the PGS. The rationale for including mood and anxiety symptoms in association with stressful events followed the recommendations presented earlier in this paper (International Consensus Group on Depression and Anxiety 2004).

Analyses

The data were assessed for multivariate normality and homogeneity of variance according to the recommendations of Tabachnick and Fidell (1996). Since MANCOVA was sensitive to outliers, a test for outliers was conducted to ensure normal distribution (Tabachnick and Fidell, 1996). In addition, before differences for dependent variables on the independent variable were analyzed, the scores on the outcome measures were assessed for redundancy. For example, the Perinatal Grief Scale (PGS) and the Impact of Event Scale (IES) have been used concurrently in a previous study measuring the impact of pregnancy loss (Hunfeld et al., 1997) but assessment for redundancy was not reported. For these reasons, all instruments were assessed for multi-co-linearity via a Pearson's Correlation. Because the PGS and the IES scales tapped two distinct but related constructs, a moderate correlation was expected. The Statistical Package for the Sciences Version 17.0 was used to perform the statistical analyses. Data were entered by a trained and paid research assistant. A biostatistician was consulted for the analyses.

First, descriptive statistics were used to analyze and compare age, demographic and health characteristics among the three groups, and the pregnancy and abortion characteristics between the two abortion groups. A Chi-Square Test for nominal data and a Kruskal-Wallis rank test for ordinal data were performed on all items and tested for significant differences among groups. ANOVA was used to test differences in age and number of educational years among groups.

Second, a three group comparison was performed to analyze the differences in the psychological outcome among the three groups. Descriptive statistics were used to analyze means, standard deviations, and frequencies. Then, a MANCOVA was used to analyze the characteristics of psychological distress among groups. MANCOVA analyzes several dependent variables and protects against the inflation of a Type I error through the effects of multiple testing (Tabachnick and Fidell, 1996). MANCOVA also adjusts for covariates. The covariate of co-existing psychopathology was tested for significance and controlled as required.

Third, a two group comparison was performed to analyze the severity of psychological distress after abortion among participants who sought treatment after abortion and those who did not seek treatment after abortion. MANCOVA and T-tests were used to test the differences between the two groups. The covariates of co-existing psychopathology, length of time post abortion and numbers of abortion were tested for significance and controlled as required.

Finally, the determinants that were associated with the pregnancy and abortion experience were analyzed with descriptive analyses, tested for significance, and compared between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups. Determinants that were amenable to intervention were identified.

Questions (1): What are the characteristics of psychological distress after abortion among a university population? (Characteristics among Three Group Comparison)

Question (1) used MANCOVA analyses to examine the differences on outcomes of depression (BDI) and anxiety (STATE and TRAIT) among the three groups. The covariate of co-existing psychopathology (PBSI) was tested for significance. Significant differences were explored and controlled as required

Question (2): Was psychological distress after abortion more severe among the Abortion Treatment Preferring as compared to the Abortion No Treatment Preferring groups? (Severity for Two Group Comparison)

Question (2) used MANCOVA to analyze the severity of psychological distress after abortion between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups on the IES and the PGS. The *Abortion Treatment preferring* group was expected to score higher on the IES and the PGS. Significant results were explored.

Question (3) *Were co-existing psychopathology, number of abortions, age, and length of time post abortion different between the Abortion Treatment Preferring and the Abortion No Treatment Preferring groups (Covariates for Two Group Comparison)*

Question (3) used MANCOVA and a T-test to determine if co-existing psychopathology (PBSI), the length of time post abortion (TIME), and the number of abortion (NAB) were significantly different between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups. Length of time post abortion was measured in months. Age was determined by ANOVA.

Question (4) *Were there significant differences in determinants associated with the unplanned pregnancy and abortion experience between the Abortion Treatment Preferring and the Abortion No Treatment Preferring groups? If so, were some determinants of distress amenable to intervention*?

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Question (4) used descriptive statistics to analyze data from the Reproductive History Questionnaire. Determinants of the pregnancy and abortion that that may have been associated with greater psychological distress after abortion such as a greater number of medical complications, a lack of pre- or post abortion counseling, inadequate social support, etc were summed, tested for significance, and compared between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups. Determinants that may have been modified by intervention were identified.

Results

Data Screening

While approximately 60 participants per group were planned, several factors limited recruitment for this study which resulted in a smaller sample size. Budget constraints resulted in the offering of a nominal study stipend, and when coupled with a sensitive subject matter limited recruitment. Differing political climates surrounding abortion between the United States and Canada may have contributed to a few participants being recruited from Vermont. A total of 151 participants were recruited, interviewed and enrolled in the study from September of 2005 through January 2010. The sample of 151 participants was composed of 48 *Abortion Treatment Preferring* participants, 41 *Abortion No Treatment Preferring* participants, and 62 *Control* participants. This met the estimate of 30 to 50 participants per group needed to detect a medium to large effect size within the three group analyses.

Of note is that, many *Abortion No Treatment Preferring* participants volunteered that they would have desired services immediately after their abortion experience. Three participants of the *Abortion Treatment Preferring* group were referred for psychiatric services to the McGill University Student Health Services due to BDI scores of moderate to severe depression or for the endorsement of suicide. Eight participants of the *Abortion Treatment Preferring* group requested services at the time of interview and were referred for counseling at the McGill Counseling Services, the University of Vermont Counseling Center, or to the Center for Reproductive Loss in Montreal. One participant reported no distress after abortion, but became distressed after completing the questionnaire, indicating that she did not realize how disturbed she was over the abortion. She was referred for psychiatric intervention and excluded from the sample due to an inability to consider the abortion without undue distress. This was reported to the McGill Institutional Review Board as an Adverse Event and she was referred to appropriate services.

The data were screened for normality, variance, multi-co-linearity, missing data, and redundancy. Multivariate normality was determined by analyzing the residuals of

each variable. The Henze–Zirkler Normality Test was found not significant for the three group and two group models However, the three group model was found to be slightly skewed. Homogeneity of variance was tested by the Box's M Test of Equality of Covariance prior to each analysis. No significance was found for the three-group model (Box M = 14.441, F= 1.166, df 1 = 12, df 2= 77191.1 Sig. = 0.301**)** nor for the two group model (Box M 21.602, F= 1.346, df 1 =15, df2= 26498.46 Sig. 0.164). Missing data were determined by visual inspection determined random as opposed to systematic. For the multivariate analyses two cases were dropped due to missing data from the *Abortion Treatment Preferring* group decreasing from n=41 to n=39 cases. Per consultation from the statistician, imputation of missing data was not recommended. A total of N=151 completed cases were retained for the descriptive analyses and a total of N= 149 were retained for the multivariate analyses.

A Pearson Correlation to assess for multi-co-linearity among the dependent variables was performed. See Table II-2 Correlation of Psychological Measures below. The Pearson analysis found a moderate to high correlation at the $p = < 0.001$ level of significance with values ranging from 0.264 to 0.807 which is required for a MANCOVA analyses. As expected, scores on the IES and PGS showed a moderately high correlation (0.686), as were scores between the BDI and the STATE (0.619) and TRAIT (0.692). In addition, the STATE and TRAIT were the most highly correlated (0.807) as they both tap anxiety symptoms. No values > 0.807 suggesting redundancy of measures were found.

Table II-2 Correlation Matrix for All Measures using a Pearson Correlation

		BDItotal	STATEtotal	TRAITtotal	BSI PDSI	IESStotal	PGStotal
BDItotal	Pearson Correlation	1	.619**	.692**	.634**	.328**	.434**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	150	150	150	149	150	150
STATEtotal	Pearson Correlation	*	1	.807**	.666**	.300**	.374**
	N		151	151	150	151	151
TRAITtotal	Pearson Correlation			1	.692**	.266**	.368**
	N			151	150	151	151
PBSI	Pearson Correlation			.692**	1	.264**	.356**
	N			150	150	150	150
IEStotal	Pearson Correlation	.				1	.686**
	N					151	151
PGStotal	Pearson Correlation						1
	N						151

**. Correlation is significant at the 0.01 level (2-tailed).

Descriptive Characteristics among the Three Groups

Demographic Characteristics

There were no demographic differences among participants between schools, an urban and rural setting, or between Canada and the United States. Of the total sample, the majority were Caucasian (67%, n=101), citizens of Canada, (66%., n= 99), and attended McGill University (84%, n=127). Participants from the Universities of Vermont and Concordia comprised less than 20% of the sample. No major demographic differences were found between groups. Most of the *Control* group lived on campus as compared to 10% (n=5) and 5% (n=2) of the other groups (Chi Square = 21.098, df =6, p = .002). Concerning religious practice, no significant differences among the groups were found**.** The majority of the total sample (52%, n=79) as well as the majority of each group declared no religious affiliation (*Abortion Treatment Preferring* = 62%, *Abortion No Treatment Preferring* = 51%, *Controls* = 45%). Likewise, most participants did not attended religious services (74%, n=112). See Table II-3 Description of Demographic Characteristics for Three Groups below.

The age of participants ranged from 18 to 35 years (*M* 22.4 years *SD* 3.78). As expected, the *Control* group was significantly younger than the groups who had abortions (*M Control* = 20.4 years, vs. *M Abortion Treatment Preferring* = 23.9 years, *M Abortion No Treatment Preferring*= 23.7 years, df= 2, F= 18.250, p =.000). The *Control* group was also more homogenous in age (*SD*= 1.7 years) as compared to the total sample. There were no significant differences in age between the *Abortion Treatment Preferring* group and the *Abortion No Treatment Preferring* groups. All participants who obtained an abortion did so under twenty five years of age The younger *Contro*l group also resulted in an expected trend of less educational years than the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups (6.6 years vs. 7.58, 7.54, df=2, F= 5.400, p = .005). See Table II-4 Analysis of Variance of Age and Education by Group below.

Table II-3 Description of Demographic Characteristics for Three Groups

VARIABLE	GROUP 1	GROUP 2	GROUP 3	TOTAL	P VALUE
SCHOOL					**Chi Squared,= 12.6, d f =4, p < .05**
McGill	40 (83.3%)	35 (85.4%)	52 (40.9%)	127 (84.1%)	
U of V	2 (4.2%)	2 (4.9%)	10 (16.1%)	14 (9.3%)	
Concordia	6 (12.5%)	4 (9.8%)	0 (0%)	10 (6.6%)	
CITIZENSHIP					ns.
Canada	36 (75%)	29 (70.7%)	34 (54.8%)	99 (65.6%)	
USA	5 (10.4%)	8 (19.5%)	21 (33.9)	34 (22.5%)	
Asia	4 (8.3%)	1 (2.4%)	1 (1.6%)	6 (4.0%)	
Europe	3 (6.3%)	3 (4.9%)	3 (4.8%)	10 (2.6%)	
Other	0 (0%)	1 (2.4%)	2 (3.2%)	5 (2.0%)	
RACE					ns
Caucasian	31(64.6%)	29(70.7%)	41(66.1%)	101(66.9%)	
Asian	10 (20.8%)	7(17.1%)	12 (19.4)	29 (19.2%)	
First Nation	4 (8.3.%)	2 (4.9%)	6(9.7%)	12 (7.9%)	
African	2 (4.2%)	2 (4.9%)	3 (4.8%)	7 (4.6%)	
Latina	1 (2.1%)	1 (2.4%)	0 (0%)	2 (1.3%)	
MAJOR					ns
Health/Sciences	14 (29.2%)	17(42.1%)	20 (32.3%)	51 (38.8%)	
Social Sciences	18 (37.5%)	10 (24.4%)	19 (30.6%)	47 (31.1%)	
Liberal Arts	14 (29.2%)	7 (17.1%)	14 (22.6%)	35 (23.2%)	
Other	2 (4.2%)	7 (17.1%)	9 (14.6%)	18 (11.9%)	
RELIGION					ns
None Declared	30 (62.5%)	21 (51.2%)	28 (45.2%)	79 (52.3%)	
Protestant	3 (6.25%)	4 (9.8%)	9 (14.5%)	16 (10.6%)	
Catholic	12 (25.0%)	9 (22.0%)	14 (22.6%)	35 (23.2%)	
Jewish	0 (0%)	2 (4.9%)	8 (12.9%)	10 (6.6%)	
Muslim	2 (4.2%)	3 (7.3%)	2 (3.2%)	7 (4.6%)	
Buddhist/Other	1 (2.1%)	2 (4.8%)	1 (1.6%)	4 (2.6%)	
RELIGIOUS ATTENDANCE					ns
Never/Rarely	37 (77.1)	34 (84.0%)	41 (66.1%)	112 (74%)	
Occasional	7 (14.6%)	6 (14.6%)	11 (17. 2%)	24 (15.9%)	
Regular	4 (8.3%)	1 (2.4%)	10 (16.1%)	15 (9.9%)	
HOUSING					**Chi Squared =21.1, d f=6, p <. 05**
Off Campus	39 (81.2%)	35 (85.4%)	38 (61.3%)	112 (74.2%)	
On Campus	5 (10.4%)	2 (4.9%)	20 (32.3%)	27 (17.9)	
With Parents	4 (8.3%)	4 (9.8%)	4 (6.5%)	12 (7.9%)	
TOTAL CASES	N= 48	41	62	151	

Table II-4 Analysis of Variance for AGE and EDUCATIONAL YEARS by Group

		Sum of Squares	df	Mean Square	F	Sig.
AGE	Between Groups	424.657	2	212.328	18.250	<.0001
	Within Groups	1721.886	148	11.634		
	Total	2146.543	150			
EDYEARS	Between Groups	31.843	2	15.921	5.400	.005
	Within Groups	436.330	148	2.948		
	Total	468.172	150			

Health Characteristics

Likewise, there were no significant differences for health characteristics among the three groups. There were no reported differences in smoking, alcohol use, or recreational drug use among groups. However, a significant difference in emergency contraceptive use was found among groups. The *Control* group reported significantly less use of emergency contraception as compared to those who had obtained abortions (*Control* = 29% vs. *Abortion Treatment Preferring* = 68%, *Abortion No Treatment Preferring*= 78% Chi Square= 29.355, d f = 2, p< .001). Of note is that most that had abortions had used emergency contraception. However, more than 10% (N= 7) of the *Abortion Treatment Preferring* group and more than 7% (N=3) of the *Abortion No Treatment Preferring* group had used it more than four times. In fact, contraceptive use in general proved to be almost significant with about two thirds of *Control* participants reporting use as compared to > 75% in the other groups. See Table II-5 Description of Health Characteristics for the Three Groups.

In addition, there were non-significant differences reported in past mental health history, including history of suicidal ideation that are noteworthy. Suicidal ideation was lowest in the *Control* group and highest among the *Abortion Treatment- Seeking* group. Almost half of the *Abortion Treatment-Seeking* group reported a history of suicidal ideation or attempt (N=20, 42%) as opposed to about one third of the *Abortion Treatment-Seeking* group (N= 13, 32%) and one quarter of the Control group (N=15, 25%).

Table II-5 Description of Health Characteristics for Three Groups

VARIABLE	GROUP 1	GROUP 2	GROUP 3	TOTAL	P VALUE
NUMBER MEDICAL DIAGNOSES					ns
None	27 (56.3%)	27 (65.9%)	41 (66.1%)	95 (62.9%)	
One	17 (35.4%)	9 (22.0%)	15 (24.2%)	41 (27.2%)	
Two or >	4 (8.3%)	5 (12.2%)	4 (6.5%)	13 (8.6%)	
MENTAL HEALTH PROBLEMS					ns
No	38 (79.2%)	35 (85.4%)	54 (87.1%)	127 (84.1%)	
Yes	10 (20.8%)	6 (14.6%)	8 (12.9%)	24 (15.9%)	
HX SUIDICAL IDEATION					ns
No	28 (58.3%)	28 (68.3%)	46 (75.4%)	102 (68.0%)	
Yes	20 (41.7%)	13 (31.7%)	15 (24.6%)	48 (32.0%)	
SMOKING STATUS					ns
Non Smoker	42 (87.5%)	35 (85.4%)	54 (87. 1%)	131 (86.8%)	
Smoker	6 (12.5%)	6 (14.6%)	8 (12.9%)	20 (13.2%)	
ETOH USE					ns
None	10 (33.3%)	15 (36.6%)	30(48.4%)	61 (40.4%)	
3-7 /week	25 (52.1%)	21 (51.2%)	24 (38.7%)	70 (46.4%)	
8-14/week	6 (12.5%)	5 (12.2%)	7 (11.3%)	18 (11.9%)	
> 15/week	1 (2.1%)	0 (0%)	1 (1.6%)	2 (1.3%)	
RECREATIONAL DRUG USE					ns
No	35 (72.9%)	31 (75.6%)	49 (79.0%)	115 (76.2%)	
Yes	13 (27.1%)	10 (24.4%)	13 (21.0%)	36 (23.8%)	
CONTRACEPTIVE USE					ns
No	6 (12.5%)	5 (12.2%)	19 (30.6%)	30 (19.9%)	
Sometimes	3 (6.3%)	4 (9.8%)	3 (4.8%)	10 (6.6%)	
Yes	39 (81.3%)	32 (78.0%)	40(64.5%)	111 (73.5%)	
EMERGENCY CONTRACEPTION			**Chi Squared= 29.355, df =2, p < .001**		
None	15 (31.3%)	9 (22.0%)	44 (71.0%)	68 (45.0%)	
1-3 Times	26 (54.2%)	29 (70.7%)	17 (27.4%)	72 (47.7%)	
4-6 Times	5 (10.4%)	2 (4.9%)	0 (0%)	7 (4.6%)	
> 6 Times	2 (4.2%)	1 (2.4%)	1 (1.6%)	4 (2.6%)	
TOTAL N= CASES	48	41	62	151	

Description of Psychological Distress after Abortion

Three-Group Comparison for Characteristics of Psychological Distress

First, descriptive statistics were obtained to analyze the mean scores for the psychological outcomes of depression (BDI), anxiety (STAI), and co-existing psychopathology (PBSI) among the three groups. For depression, a BDI score of 10-18 suggests mild to moderate depression, and scores less than 10 suggest no or minimal depression. The *Abortion Treatment Preferring* group BDI scores were the highest, indicating mild depression (*M*= 12.33, *SD* = 8.143), and were higher than those of the *Abortion No Treatment Preferring* group (*M*= 8.00, *SD* =5.796), and the *Contro*l group (*M*=8.5, *SD* = 7.121). The latter two groups had similar BDI scores showing no depression. In fact, the *Abortion No Treatment Preferring* group had the least amount of depression**,** below the total mean for all three groups (*M Total* = 9.62). Finally, each group showed a similarly large SD that suggested a wide range in depression. See Table II-6 Descriptive Statistics for BDI and STAI for Three Groups as below.

The STAI measured anxiety and was analyzed as two sub-scales, STATE and TRAIT anxiety. STATE anxiety scores measured transitory or situational anxiety and ranged from 20 to 80, indicating low to high levels of transitory anxiety. The *Abortion Treatment Preferring* group showed the highest STATE anxiety, indicating moderate transitory anxiety (*M* = 43.52, *SD*=13.540). The STATE anxiety scores for the *Abortion Treatment Preferring* group were higher than those of the *Abortion No Treatment Preferring* group (*M* = 37.59, *SD* = 10.389) and the *Control* group (*M* = 37.15 *SD*=12.973). The latter groups showed similar means for mild STATE anxiety and were below the total mean. On the other hand, TRAIT anxiety scores measured dispositional anxiety and ranged similarly from 20 to 80, indicating low to high levels of dispositional anxiety. For TRAIT anxiety, the *Abortion Treatment Preferring* group scored slightly higher than the other groups who scored below the total mean. Again, the groups showed a wide but similar SD reflecting heterogeneity within groups.

Co-existing psychopathology was determined by the Positive Symptom Distress Scale of the Brief Symptom Inventory (PBSI). The PBSI was measured as a covariate and found to be different among groups.

MANCOVA was used to analyze the main effects of the independent variable, GROUP status, and the covariate, the PBSI on the dependent variables, the BDI, STATE, and TRAIT outcomes. For this study, Wilk's Lambda was the multivariate test selected to determine significance. Wilk's Lambda is the most widely used (Munro, 2001) and recommended criterion for multivariate tests (Tabachnick and Fidell, 1996). Tables for the MANCOVA output have been edited, but complete data is available upon request.

The results for the multivariate results found that GROUP status had a significant effect on outcome (Wilk's Lambda = .902, F= 2.489, $p < .05$). In addition, the PBSI as a covariate had a significant effect on outcome (Wilk's Lambda = .522, F= 43.053, $p < .001$). Further, the interaction between GROUP * PBSI was significant (Wilk's Lambda= .883, F=3.013, $p < .05$). See Table II-7 Multivariate Tests for Main Effect and Covariate PBSI for Three GROUPS below.

Table II- 6 Descriptive Statistics for BDI and STAI among the Three Groups

VARIABLE	GROUP	MEAN	STD. DEVIATION	N
DEPRESSION				
	1. ABORTION TREATMENT SEEKING	12.33	8.143	48
	2 ABORTION NON-TREATMENT SEEKING	8.00	5.796	39
	3 CONTROLS	8.56	7.121	62
TOTAL MEAN		9.62	7.349	149
ANXIETY STATE ANXIETY				
	1 ABORTION TREATMENT SEEKING	43.52	13.540	48
	2 ABORTION NON-TREATMENT SEEKING	37.61	10.283	39
	3 CONTROLS	37.15	12.973	62
TOTAL MEAN		39.30	12.747	149
ANXIETY TRAIT ANXIETY				
	1 ABORTION TREATMENT SEEKING	45.42	12.719	48
	2 ABORTION NON-TREATMENT SEEKING	40.93	11.299	39
	3 CONTROLS	40.84	11.844	62
TOTAL MEAN		42.32	12.095	149

Table II-7 Multivariate Tests on Psychological Outcome for the Three Groups

Multivariate Tests[d]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Intercept	Wilks' Lambda	.679	22.237[a]	3.000	141.000	.000	.321	66.710	1.000
Group	Wilks' Lambda	.902	2.489[a]	6.000	282.000	.023	.050	14.934	.831
PBSI	Wilks' Lambda	.522	43.053[a]	3.000	141.000	.000	.478	129.158	1.000
Group* PBSI	Wilks' Lambda	.883	3.013[a]	6.000	282.000	.007	.060	18.080	.905

Since GROUP, PBSI, and the GROUP* PBSI interaction were significant ($p < .05$), the between subject effects were examined for each outcome separately. The results showed no differences on depression and anxiety. When the effects were tested, the between subject results showed that the GROUP and the GROUP* PBSI interaction showed no significant effects ($p > .05$) on the BDI, STATE, and TRAIT outcome. According to Stevens (1996), while finding significant multivariate effects usually results in finding significant between subject effects, this is not always the case. This can be explained by the fact that the multivariate tests and the between subject tests analyze different types of data. Multivariate tests account for the correlation among all the variables, whereas the between subject tests do not (Stevens, 1996). In multivariate testing, the greater number of correlations among variables results in a greater number of degrees of freedom from error, which make multivariate tests more powerful. In this study, the multivariate results for GROUP showed almost twice the number of degrees of freedom from error (Wilks' Lambda d f= 282.00) as those of the between subject effects for GROUP (Wilks' Lambda d f =143), rendering the multivariate results more accurate. Similarly, in the GROUP and PBSI interaction the degrees of freedom were higher in the multivariate (Wilks' Lambda d f = 282.00) as opposed to the between subjects results (d f =143). Thus, the results showed that that the three groups differed significantly on psychological outcome though the specific differences of dependent

variables could not be examined. Further, significant differences between groups and between groups and the PBSI were expected,

In contrast, the PBSI had a significant between subject effects on depression (BDI) ($F = 73.317$, $p < .001$), STATE anxiety ($F = 72.06$, $p < .001$), and TRAIT anxiety ($F= 111.614$, $p <.001$.). Since the PBSI was significant, the BDI, STATE, and TRAIT scores were adjusted.

After adjusting for the PBSI, the BDI scores for the *Abortion Treatment Preferring* group scores decreased from M =12.33 to M =10.652 yet still showed mild depression. In contrast, the adjusted BDI scores for the *Abortion No Treatment Preferring* group slightly increased from M= 8.00 to M= 8.899, indicating no depression. The *Control* group adjusted BDI scores remained similar M = 8.56 to M= 8.949, still indicating no depression. After adjusting for PBSI, STATE anxiety scores for the *Abortion Treatment Preferring* group decreased from M=43.52 to M= 41.26, indicating moderate anxiety. The *Abortion No Treatment Preferring* group was unchanged and similar to the *Control* group. Finally, when TRAIT scores were adjusted for the PBSI, the *Abortion Treatment Preferring* group showed a slight decrease from M = 45.42 to M = 43.29. In contrast, the adjusted means for the other two groups slightly increased. This caused the TRAIT scores to become essentially equivalent for the two abortion groups which were slightly higher than the scores for the *Controls*. See Table II-8 Estimated Marginal Means for BDI, STATE, and TRAIT Anxiety for Three Groups After Adjusting for PBSI.

Table II-8 Estimated Marginal Means on Psychological Outcome for Three Groups When Adjusted for PBSI

Dependent Variable	GROUP	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
BDItotal	1	10.652[a]	.845	8.983	12.322
	2	8.899[a]	.933	7.054	10.744
	3	8.949[a]	.720	7.527	10.372
STATEtotal	1	41.264[a]	1.438	38.422	44.105
	2	38.841[a]	1.589	35.700	41.981
	3	38.191[a]	1.225	35.770	40.612
TRAITtotal	1	43.294[a]	1.320	40.684	45.904
	2	43.072[a]	1.459	40.188	45.957
	3	41.799[a]	1.125	39.576	44.022

Group1 = ABORTION TREATMENT SEEKING GROUP
Group2= ABORTION NON-TREATMENT SEEKING GROUP
Group3= NO ABORTION NON TREATMENT SEEKING

Thus, the three groups differed slightly on depression and state anxiety after controlling for co-existing psychopathology. The *Abortion Treatment Preferring* group reported a higher rate of depression which was mild in severity. The *Abortion No Treatment Preferring* and Control groups reported no depression. In addition, the *Abortion Treatment Preferring* group reported slightly higher situational anxiety than did the *Abortion No Treatment Preferring* and *Control* groups which were similar in situational anxiety. There were no significant differences in dispositional anxiety among the three groups. Psychological distress after abortion among university students was characterized by symptoms of mild depression, moderate situational anxiety, and higher co-existing psychopathology when compared to those who do not seek treatment. For some, it appears that depressive and anxiety symptoms persist and remain severe enough to seek treatment long after the abortion occurred.

Post Hoc Bonferroni Test for Significance on Multiple Comparisons for Three Groups

In order to determine where significant differences lie, a post hoc analysis was performed on the three groups. For AGE, the results of the post hoc analysis indicate a significant difference in mean age among the three groups ($p < .001$). The post hoc comparison showed that the *Control* group was significantly different and younger than both the *Abortion Treatment-Seeking* group and the abortion groups. However, the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups were similar in mean age.

The three groups also differed on the PBSI. The *Abortion Treatment Preferring* group showed significantly greater co-existing psychopathology than the *Abortion No Treatment Preferring* group ($p < .05$). However, no differences were noted on the PBSI between the *Abortion No Treatment Preferring* and the *Control* groups**.** Finally, on the BDI, the *Abortion Treatment Preferring* group was significantly higher than the other two groups ($p < .05$), and higher than the *Control* group on STATE anxiety. Since no differences were found on TRAIT scores among groups ($p > .05$), these were not presented in the table. See Table II-9 Post Hoc Bonferronni Test for Significance Among Three Groups as below.

Table II-9 Post Hoc Bonferroni Tests of Significance for Three Group Comparison

Dependent Variable	(I) GROUP	(J) GROUP	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
AGE	1	2	.189	.725	1.000	-1.57	1.94
		3	3.493*	.656	.000	1.90	5.08
	2	1	-.189	.725	1.000	-1.94	1.57
		3	3.304*	.687	.000	1.64	4.97
PBSI Average level of distress	1	2	.24853*	.10166	.047	.0024	.4947
		3	.19828	.09129	.094	-.0228	.4193
	2	1	-.24853*	.10166	.047	-.4947	-.0024
		3	-.05026	.09630	1.000	-.2835	.1829
BDItotal	1	2	4.333*	1.531	.016	.63	8.04
		3	3.769*	1.375	.021	.44	7.10
	2	1	-4.333*	1.531	.016	-8.04	-.63
		3	-.565	1.451	1.000	-4.08	2.95
STATEtotal	1	2	5.911	2.657	.083	-.52	12.35
		3	6.376*	2.402	.026	.56	12.19
	2	1	-5.911	2.657	.083	-12.35	.52
		3	.465	2.515	1.000	-5.63	6.56

*. The mean difference is significant at the 0.05 level.

GROUP 1 = ABORTION TREATMENT PREFERRING

GROUP 2 = ABORTION NO TREATMENT PREFERRING

GROUP 3 = NO ABORTION NO TREATMENT PREFERRING (CONTROLS)

Two-Group Comparison for Severity of Event Related Psychological Distress after Abortion

In the second analyses, the severity of psychological distress after abortion between the two abortion groups was analyzed using MANCOVA. These analyses included psychological distress after abortion that was specific to the unplanned pregnancy and abortion experience and measured by the IES and the PGS between the *Abortion Treatment Preferring and the Abortion No Treatment Preferring groups*. The IES measures the severity of psychological stress to a referenced event, the target abortion. Scores on the IES range from 0-35. Scores above 26 indicate moderate to severe psychological stress reaction. In addition, since there were significant differences in the *Abortion Treatment Preferring* group on the BDI, STATE anxiety, and the PBSI, these were entered into the analysis. Further, since the *Abortion Treatment Preferring* group had higher TRAIT anxiety scores, though not significant in the three group comparison, TRAIT anxiety was analyzed between the two groups to identify any differences in dispositional anxiety. In addition, the covariates of time since the abortion, number of abortions, and age were tested for differences between the two groups and analyzed if significant.

First, descriptive statistics were used to examine means and standard deviations for the IES and PGS. The *Abortion Treatment Preferring* group mean scores were above 26 indicating a moderate to severe psychological stress reaction to the abortion IES (*M*= 28.29, *SD*= 14.760). In contrast, the *Abortion No Treatment Preferring* group mean scores showed a mild psychological stress reaction to the abortion IES (*M* =14.28, *SD* = 15.091). For perinatal grief, the PGS scores range from total scores of 33 to 165 with scores greater than 90 signaling severe grief. The *Abortion Treatment Preferring* group showed higher PGS scores indicating moderate perinatal grief (*M*= 64.42, *SD* = 19.940) than did the *Abortion No Treatment Preferring* group (*M*= 47.97, *SD* = 14.059). See Table II-10 Descriptive Statistics for IES and PGS for Two GROUP Comparison below.

Table II-10 Descriptive Statistics for IES and PGS for Two Group Comparison

Descriptive Statistics

	GROUP	Mean	Std. Deviation	N
IEStotal	1	28.29	14.760	48
	2	14.28	15.091	39
	Total	22.01	16.395	87
PGStotal	1	64.42	19.940	48
	2	47.97	14.059	39
	Total	57.05	19.294	87

Group 1 = ABORTION TREATMENT PREFERRING GROUP

Group 2= ABORTION NO TREATMENT PREFERRING GROUP

Covariates of Time after Abortion, Number of Abortions, and Age for Two Groups

The length of time since abortion was determined using a T-test to analyze differences between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups. The time post abortion was calculated in months from the date of the abortion to the date of the study interview. The length of times ranged from 0.13 months (3 days) to 142 months (11.8 years) with an average of about three years (*M*= 32.8 months, or 2.7 years, *SD* = 33.8 months, 2.8 years). No significant differences were found between the groups for length of time after abortion ($p > .05$). See Table II-11 Length of Time Since the Abortion between the Two Abortion Groups.

Table II-11 Length of Time Since Abortion between the Two Abortion Groups

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Time post abortion In months	1	48	35.1869	35.35010	5.10235
	2	41	29.7615	32.25419	5.03726

Group1 = ABORTION TREATMENT PREFERRING GROUP

Group 2= ABORTION No-TREATMENT PREFERRING GROUP

Then, the number of abortions was analyzed between the two groups. The number of abortions was measured categorically as one abortion or more than one abortion and tested for significance as a covariate. There were no differences in the number of abortions between groups (Chi Squared Analysis = .002, d f=1, p >.05). See Table II- 12 Number of Abortion between the Two Abortion Groups below.

Table II- 12 Number of Abortion between the Two Abortion Groups

GROUP * More than one abortion by Cross Tabulation

			More than one abortion?		
			No	Yes	Total
GROUP	1	Count	42	6	48
		% within GROUP	87.5%	12.5%	100.0%
		% within More than one abortion?	53.8%	54.5%	53.9%
	2	Count	36	5	41
		% within GROUP	87.8%	12.2%	100.0%
		% within More than one abortion?	46.2%	45.5%	46.1%
Total		Count	78	11	89
		% within GROUP	87.6%	12.4%	100.0%
		% within More than one abortion?	100.0%	100.0%	100.0%

Group1 = ABORTION TREATMENT PREFERRING GROUP

Group 2= ABORTION No-TREATMENT PREFERRING GROUP

Next, age was examined via ANOVA for significance between the two abortion groups as a continuous variable. The *Abortion Treatment Preferring* group mean age was *M*=23.9 years and ranged from 18 to 35 years. Similarly, the *Abortion No Treatment Preferring* group was *M* = 23.71 years with an equal range. All participants had an abortion under twenty five years of age. When AGE between the two abortion groups was tested, no significant differences were found (Wilk's Lambda = .973, F = .434, $p > .05$).

Then MANCOVA was used to test the covariates for interactions between groups and none were found. There was only an interaction between group and the co-existing psychopathology (GROUP * PBSI p = .025). Hence, the covariates of younger age, less time since the abortion, and multiple abortions were not associated with

differences in those who sought treatment as compared to those who did not within this sample. Rather, greater co-existing psychopathology appeared to be one of the only significant differences for the *Abortion Treatment Preferring* group. A higher level of co-existing psychopathology was consistent with the higher scores of depression and situational anxiety among the *Abortion Treatment Preferring* group.

A MANCOVA was used to analyze the main effects of GROUP status and the covariate PBSI on the psychological outcome between the two abortion groups. The multivariate tests showed that the GROUP status had a significant effect on outcome (Wilk's Lambda = .856, F=2.9, d f = 79.00, p <.05). In addition, the PBSI had a significant effect on the outcomes (Wilk's Lambda = .504, F =15.524, d f= 79.00, p< .001). Further, the interaction of GROUP * PBSI was significant (Wilk's Lambda = .860, F = 2.57, d f 79.00, p <. 05). As occurred in the three group comparison, it was expected that the two group comparison would find multivariate significance but not between subject significance and this was the case. Therefore, the PBSI for the between subject effects were examined. The between subject results showed that the PBSI had an effect on the BDI, STATE, TRAIT, IES, and PGS at the p< .001 level of significance. See Table II-13 Between Subject Effects for the Two Abortion Groups below.

Table II-13 Between Subjects Effects for Two Group Comparison

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
PSDI_BSI	BDItotal	1603.357	1	1603.357	59.365	.000	.417	59.365	1.000
	STATEtotal	2910.346	1	2910.346	27.550	.000	.249	27.550	.999
	TRAITtotal	4860.370	1	4860.370	53.812	.000	.393	53.812	1.000
	IEStotal	3734.052	1	3734.052	20.925	.000	.201	20.925	.995
	PGStotal	5465.212	1	5465.212	22.777	.000	.215	22.777	.997

Since the PBSI was a significant covariate on all outcomes between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups, the BDI, STATE, TRAIT, IES and the PGS scores were adjusted for the PBSI. After adjusting for the PBSI between the two abortion groups, the BDI scores for the *Abortion Treatment Preferring* group slightly decreased from the unadjusted scores between the two groups (*M* = 12.33 to *M* = 11.098). Conversely, the adjusted BDI scores for the *Abortion No Treatment Preferring* group increased (*M*= 7.972 to *M*= 9.28). BDI scores remained significantly different between groups

For STATE anxiety, after adjusting for the PBSI, the *Abortion Treatment Preferring* group showed a slight decrease (*M* = 43.52 to *M* = 41.863) yet still remained significantly higher than the adjusted STATE scores for the *Abortion No Treatment Preferring* group. The adjusted STATE scores for the *Abortion No Treatment Preferring* group showed a slight increase (M = 37.59 to 39.36). When adjusted for the PBSI, TRAIT anxiety decreased in the *Abortion Treatment Preferring* group (*M* = 45.42 to *M*= 43.857) and increased for the *Abortion No Treatment Preferring* group (*M*= 40.95 to *M*=43.95). This continued to result in no significant differences in TRAIT anxiety between the two abortion groups.

After adjusting for the PBSI, the adjusted IES scores for the *Abortion Treatment Preferring* group decreased from *M* = 28.29 to *M* = 26.868 and continued to show a moderate to severe psychological stress reaction to the abortion. Conversely, adjusted IES scores for the *Abortion No Treatment Preferring* group increased from *M* = 14.44 to *M* = 16.84. Similar results occurred when the when PGS was adjusted for the PBSI. The *Abortion Treatment Preferring* group scores decreased from *M* =64.42 to *M* = 62.542 and the *Abortion No Treatment Preferring* group increased from *M* = 48.02 to *M* = 50.889. See Table II-14 Estimated Marginal Means for IES and PGS after Adjusting for PBSI between Two Abortion Groups. After adjusting for co-existing psychopathology, the differences between groups remained significant at the p <. 05 level.

Thus, the severity of psychological distress after abortion for those who seek treatment to relieve it as compared to those who do not seek treatment included higher levels of depression. In addition, those who seek treatment for psychological distress

after abortion showed moderate to severe symptoms of a post traumatic stress reaction and a moderate level of perinatal grief which were specific to the unplanned pregnancy and abortion experience as compared to those who did not seek treatment. While those who sought treatment had slightly higher levels of situational anxiety, there were no differences in levels of dispositional anxiety between the two groups.

Table II-14 Estimated Marginal Means for BDI, STAE, TRAIT, IES and PGS After Adjusting for PBSI for Two Group Comparison

GROUP

Dependent Variable	GROUP	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
BDItotal	1	11.098[a]	.766	9.575	12.622
	2	9.283[a]	.889	7.515	11.052
STATEtotal	1	41.863[a]	1.515	38.850	44.876
	2	39.361[a]	1.759	35.862	42.859
TRAITtotal	1	43.857[a]	1.401	41.071	46.643
	2	43.955[a]	1.626	40.720	47.190
IEStotal	1	26.868[a]	1.969	22.952	30.784
	2	16.848[a]	2.286	12.301	21.394
PGStotal	1	62.542[a]	2.283	58.001	67.082
	2	50.889[a]	2.651	45.617	56.162

Group 1 = ABORTION TREATMENT PRFERRING GROUP

Group 2 = ABORTION No TREATMENT PREFERRING GROUP

Determinants Associated with the Pregnancy and Abortion Experience

Finally, descriptive statistics were used to identify other determinants associated with differences between those who sought treatment and those who did not. Determinants of the pregnancy and abortion experience were collected from those who had abortions via self–report on the Reproductive Experience Questionnaire. Descriptive data were summed, compared, and tested for significant differences between the *Abortion Treatment Preferring* group and the *Abortion No Treatment Preferring group* using a Chi Squared or Kruskal-Wallis analysis. For purposes of clarity, these determinants were separated into two sections: (a) determinants associated with the pregnancy and abortion experience and (b) determinants associated with the pregnancy and abortion experience that may be modified by intervention. These will be reported separately.

The first section included determinants associated with the pregnancy and abortion experience and addressed the medical characteristics of the abortion experience such as type of abortion, location of abortion, whether there were any medical complications associated with the abortion, etc. These results showed no statistically significant differences between the *Abortion Treatment Preferring* and the *Abortion No Treatment Preferring* groups. However, several differences between the groups were not statistically significant but noteworthy. First, physical complications associated with the abortion procedure itself such as excessive bleeding, severe pain, infection or incomplete abortion requiring return visits or another surgery were close to significance between groups (Chi Squared= 3.516, d f = 2 , p = .061). A higher number of the *Abortion Treatment Preferring* group reported medical or surgical complications after the abortion (41%, n = 16) as compared to the *Abortion No Treatment Preferring* group (20%, n = 7). Second, there was also a higher number of instances of suicidal ideation after abortion that was close to significance (Chi Squared = 3.483, d f=1, p = .062) among the *Abortion Treatment Preferring* group (32%, n = 14) as opposed to the *Abortion No Treatment Preferring* group (15 %, n = 6). Finally, while not significant (Chi Squared = 1.827, d f =1, p = .176), a greater number of the *Abortion Treatment Preferring* group viewed the embryo via ultrasound immediately prior to the abortion

procedure (68%, n = 31). Viewing the embryo humanizes the pregnancy and abortion experience and could have contributed to higher levels of distress afterwards. In contrast, fewer of the *Abortion No Treatment Preferring* group viewed the embryo via ultrasound prior to the abortion (54%, n = 21). See Table II-15 Determinants of the Pregnancy and Abortion for the Two Abortion Groups.

The second section showed one significant finding that was an important determinant for interventions. A greater number of the *Abortion Treatment Preferring* group identified family members as the least helpful persons, as opposed to less of those in the *Abortion No Treatment Preferring* group (Chi Squared = 13.2, d f=5, p <.05). Another finding that is noteworthy and almost significant (Chi Squared = 3.643, d f=1, p =. 056) was that a greater number of the *Abortion Treatment Preferring* group sought psychological resources after abortion as compared to the *Abortion No Treatment Preferring* group. These findings suggest those who seek treatment after abortion may do so because of a lack of family support as well as a lack of psychological resources or information regarding psychological distress after abortion. Determinants that may be amenable to intervention include services that target these gaps. Such services may include providing an environment of confidentiality and psychological support, and providing informational resources that address psychological distress after abortion. See Table II-16 Determinants of the Pregnancy and Abortion Experience for Two Abortion Groups that may be Modifiable to Interventions

Table II-15 Determinants of the Pregnancy and Abortion for Abortion Groups

Variable	GROUP 1 ABORTION TREATMENT PREFERRING	GROUP 2 ABORTION NO TREATMENT PREFERRING	TOTAL	P VALUE
ABORTIONS				
One	42 (87.5%)	36 (87.8)	78 (87.6%)	ns
Two	4 (8.3%)	4 (9.8%)	8 (9.0%)	
Three	2 (4.2%)	1 (2.4%)	3 (3.5%)	
GESTATIONAL AGE in WEEKS				ns
6 or Less	14 (31.8%)	10 (25%)	24 (27.5)	
12 or<	32 (64.0%)	30 (72.7%)	62 (69%)	
13 or>	2 (4.2)	1 (2.4%)	3 (3.5%)	
ABORTION TYPE				ns
Surgical	44 (91.7%)	39 (95.1%)	83 (93.2%)	
Medical	4 (8.3 %)	1 (2.4%)	5 (3.3%)	
Saline	0 0%)	1 (2.4%)	1 (0.7%)	
PHYSICAL COMPLICATIONS				3.516, d f=1 (p = . 061)
No	23 (59.0%)	27 (79.4%)	50 (68.5%)	
Yes	16 (41.0%)	7 (20.6%)	23 (31.5%)	
POST ABORTION SUICIDAL IDEATION				3.483, d f= 1 (p = .062)
No	30 (68.2%)	35 (85.4%)	65 (76.5%)	
Yes	14 (31.8%)	6 (14.6%)	20 (23.5%)	
ANESTHESIA TYPE				ns
Local	18 (37.5%)	16 (43.9%)	34 (38.2%)	
General	12 (25.0%)	18 (43.9%)	30 (33.7%)	
None	18 (37.5%)	7 (17.1%)	25 (23.6%)	
ABORTION LOCATION				ns
Hospital	13 (27.7%)	10 (25.0%)	23 (26.4%)	
Clinic Abortion	3 (6.4%)	1 (2.5%)	4 (4.6%)	.
Clinic	28 (59.6%)	29 (72.5%)	57 (65.5%)	
Other	3 (6.4%)	0 (0%)	3 (3.4%)	
VIEWED EMBRYO				1.827, d f= 1 (p = .176)
No	15 (31.9%)	18 (46.2%)	33 (38.4%)	
Yes	31 (68.1%)	21 (53.6%)	53 (61.6%)	
TOTAL N=	48	41	89 CASES	

Table II-16 Determinants of Pregnancy and Abortion Modifiable to Interventions

Variable	GROUP 1 ABORTION TREATMENT PREFERRING	GROUP 2 ABORTION NO TREATMENT PREFERRING	TOTAL	P VALUE
PRE ABORTION COUNSELING				
Yes	16 (34%)	19 (46%)	35 (40%)	ns
No	31 (66%)	22 (54%)	53 (60%)	
POST ABORTION COUNSELING				
Yes	6 (12%)	6 (13%)	12 (13%)	ns
No	40 (85%)	35 (85%)	75 (86%)	
POSTABORTION PSYCH RESCOURCES		Chi Squared = 3. 643, df=1, p=. 056		
Yes	7 (31%)	1 (6%)	8 (21%)	.
No	15(68%)	15(93%)	30 (78%)	
ACCESSED STUDENT HEALTH POST ABORTION				
Yes	18 (38%)	12 (29.3%)	30 (34%)	ns
No	29 (62%)	29 (70%)	58 (66%)	
MENTAL HEALTH SERVICES POST ABORTION				
Yes	23 (49%)	16 (39%)	39(49%)	ns
No	23 (49%)	25 (61%)	48(55%)	
PARENTAL KNOWLEDGE OF ABORTION				ns
Yes	24 (50%)	14 (34%)	38 (43%)	
No	24 (50%)	27 (66%)	51 (57%)	
MOST HELPFUL PERSON				
None/Other	1 (1%)	3 (4%)	4 (5.3%)	ns
Partner	15 (38%)	10 (28%)	25 (33%)	
Friend	16 (41%)	15 (42%)	31 (41%)	
Family or Healthcare Provider	3 (8%)	4 (11%)	7 ((%)	
LEAST HELPFUL PERSON		**Chi Squared = 13.2, df=5, p <.05**		
None/Other	3 (9%)	7 (22%)	10 (15%)	
Partner	7 (29%)	13 (42%)	20 (32%)	
Friend	3 (9%)	3 (10%)	6 (10%)	
Family	10 (31%)	3 (10%)	13 (20%)	
Healthcare Provider	9 (28%)	5 (16%)	14 (22%)	
TOTAL N=	47/48	41	87/89 CASES	

Discussion

Several important findings emerge from this study. First, more than 50% of the participants who had abortions wanted professional help for significant and persistent distress associated with their abortion (54%, N = 48). A 50% incidence of women reporting distress after abortion is higher than current estimates of than 30% that have been reported thus far (Bradshaw and Slade, 2003, Fergusson et al., 2009). This may have been due to a number of factors such as: (a) the broad inclusion criteria for participants who reported distress after abortion which ranged from mild to severe, (b) conducting the study in collaboration with the university student health services may have provided greater acceptability, confidentiality, and emotional safety for distressed participants to seek assistance, and (c) offering a non-political perspective on abortion allowed participants to express both satisfaction and dissatisfaction with their abortion experience. Of those who had an abortion, surprisingly some had never informed anyone of the abortion and used the interview as an initial opportunity to do so. Those who preferred treatment attributed some distress to the secrecy, isolation and shame that they felt surrounding their abortion and sought a professional and confidential opportunity for disclosure.

The second finding was that participants reported depression, and anxiety, as well as moderate to severe symptoms of a psychological stress disorder and perinatal grief that were specific to the pregnancy and abortion experience. The findings of depression (Pederson, 2008), anxiety (Cougle, Reardon, and Coleman, 2005) and abortion specific stress (Broen. et al., 2005), and grief have been singularly reported in other studies of adult women after abortion. The findings of depression, anxiety, and suicidal thoughts after abortion among women under twenty-five years of age support those of Fergusson (2006) in a sample from New Zealand. This study specifically provided data of target symptoms to develop evidence-based interventions for psychological distress after abortion for younger women that can be treated according to their preferences.

A third finding of this study was that, in contrast to other studies which found younger age (Franz and Reardon, 1992), multiple abortions, member of a conservative

religious tradition, and less time post abortion (Speckhard and Rue, 1992) were associated with adverse outcomes after abortion, not associated with increased levels of distress within the sample of those who sought treatment.. While all participants were university students, the women ranged from aged 18 to 35 years thus including adolescent, early, and adult-aged women across several different developmental phases. Women who were distressed over their abortion were not limited to those who were younger. This finding suggested that women may be vulnerable to psychological distress after abortion at a number of points during their lives. Of note, was that none of the sample was beginning childbearing which could awaken further vulnerabilities of psychological distress after abortion. Similarly, less time post abortion was also not associated with those who preferred treatment for higher post abortion distress. For some women, distress does not improve but may continue or worsen over time thus requiring professional intervention. Further, the finding that there were no differences in psychological outcome among those who had a single abortion as compared to those who had multiple abortions challenges recent data that suggest that having a single abortion poses less risk for psychological distress than does having multiple abortions (American Psychological Association, 2008). Finally, the fact that most participants in this study had no religious affiliation challenges assumptions that post abortion psychological distress was associated with conservative religious values.

Rather, the most significant covariate between those who preferred treatment after abortion and those who did not was the level of co-existing psychopathology. The higher rate of co-existing psychopathology among those who preferred treatment can be explained by several factors. The most obvious explanation was that the greater level of co-existing psychopathology among those who preferred treatment was associated with their symptoms of a significant psychological stress reaction and moderate grief associated with the abortion. A moderate to severe stress response can include acute avoidant or intrusive symptoms of the abortion experience which can manifest as depressed mood, higher anxiety, somatic responses, etc. Higher co-existing psychopathology was also consistent with the higher depressive and state anxiety scores that were reported among the participants who preferred treatment. Alternatively, higher co-existing psychopathology among treatment participants may also be

explained as a pre-existing difference in general psychological health between those who preferred treatment and those who did not that preceded the abortion experience. This explanation attributes the co-existing psychopathology to factors associated mental health problems prior to the abortion as opposed to mental health problems associated with the abortion, but nevertheless result in higher distress after abortion. This continues to be debated among researchers and can only definitively be answered by longitudinal studies with birth cohorts. However, because there were no significant differences found among groups in trait anxiety, which remains fairly constant across circumstances, and because no significant differences in reported mental health history were found, it does not appear that the overall emotional health of participants who preferred treatment was different preceding the abortion than that of the participants who preferred no treatment.

Another equally plausible explanation is that the circumstances of the pregnancy and abortion itself contributed at least in part to the higher overall distress as well as higher abortion specific stress after abortion. This distinction is particularly noteworthy because the aforementioned factors such as pre-existing emotional distress, age, multiple abortions etc. have been attributed to psychological distress after abortion. Moreover, since most of these factors are not modifiable to intervention, healthcare provides have made no effort to provide interventions to treat psychological distress after abortion. Further, this lack of recognition of the abortion as either independently or partially contributing to distress afterwards for some women has been the primary barrier to providing services to women who desire and need them.

Fourth, the higher use of emergency contraception among those who have had an abortion while not surprising, was of concern. While it was not noted whether participants who had an abortion were using more emergency contraception before or after the abortion, either way raises concern. The high use of emergency contraception suggested that the women were engaged in high risk sexual behavior that either resulted in the abortion or that may have been the consequence of the abortion. Either explanation exposes the fact using emergency contraception before or after having an abortion had little effect on changing behavior because some participants repeatedly found themselves in circumstances of being at risk for failed contraception.

While non significant, some noteworthy results suggested that determinants associated with the abortion and unplanned pregnancy may have contributed to or compounded the psychological distress after abortion for some participants in this study. This provided further detail to the results of the second study by Fergusson, Horwood, and Ridder (2008) who suggested that factors associated with the pregnancy and abortion may be contributing to poor outcomes afterwards. Physical complications may have prolonged the abortion procedure and added further anxiety and distress to the abortion for those who were distressed. In addition, viewing the embryo was a potentially traumatic experience for those who may not have been prepared. Counseling before and after viewing the embryo may be required to process the event as well as providing an adequate time frame beforehand for decision-making about the abortion. Some distressed participants reported viewing the embryo immediately before undergoing the abortion procedure. This experience did not allow time for either emotionally processing the image nor for informed decision-making about having the abortion.

Moreover, a higher instance of thoughts of suicide after abortion was associated with those who reported distress. It is not known whether the psychological distress associated with the target pregnancy and abortion, determinants associated with the abortion procedure itself as stated above, or determinants subsequent to the abortion contributed to the higher incidence of suicide post abortion. Nevertheless, the finding of a higher instance of suicidal thoughts after abortion among those who sought help was consistent with other studies that associated suicidal thoughts and attempts with a previous abortion among some populations of women (Mota et al., 2010; Fergusson et al., 2008; Morgan et al., 1997; Gissler et al., 1996). Further studies are required to explore the association between suicide and psychological distress after abortion.

Limitations

The generalizability of these findings may be limited due to several factors. First, the sample was self-selected women who desired treatment after abortion. This may not represent the population in most need of treatment after abortion. Next, most of those who preferred treatment viewed the embryo shortly before the abortion procedure, which may have disproportionately contributed to distress afterwards. In addition, the higher incidence of co-existing psychopathology among who preferred treatment may reflect a higher incidence of pre-existing psychopathology among those who preferred treatment. Further, there may be factors contributing to abortion distress that are not able to be detected or that may be related to unknown factors. Finally, a larger sample size would have had the advantage of more power in the analysis.

Clinical Implications

This study has implications for clinical practice and future research. First, healthcare providers have an ethical and professional obligation to develop and offer interventions that address the psychological aftermath of abortion for those women that want such services. This study identified some important target symptoms in young women who have had abortions, thus providing a first step to develop such intervention based on evidence. Interventions that treat psychological distress after abortion need to be developed, tested for efficacy, and replicated. Such services that relieve distress after abortion have the potential to decrease psychiatric morbidity associated with abortion.

Next, changes in clinical practice need to include screening, monitoring, and preventing psychological distress after abortion, especially for those who may be vulnerable. Women need to be followed for the emergence of adverse outcomes after abortion that may occur long after the abortion.

Finally, further research is needed about the determinants of the abortion procedure that may be associated with greater distress after abortion for some women such as the emotional impact of viewing the embryo or experiencing medical complications. Thus determinants associated with the abortion procedure itself, such as medical complications, viewing the embryo and suicidal ideation after the abortion, while non significant in this study need further exploring. It is worth identifying whether some of these may be able to be modified so as to prevent or lessen some degree of psychological distress after abortion.

CHAPTER FOUR
THE MODELING PHASE OF INTERVENTION DEVELOPMENT

The cross-sectional study reported in Manuscript Two determined the evidence of target symptoms for the intervention. Once the theory and evidence were established, the next phase of intervention development included the Modeling Phase. In the Modeling Phase, the results that were obtained in the Pre-Clinical Phase were applied to design the intervention. The Modeling Phase included sequenced steps of data gathering to construct the intervention.

In addition, the Modeling Phase identified issues of feasibility and delivery within contemporary clinical practice. Further, as the goal was to develop an intervention that was acceptable to a university population, this phase also determined the preferences of this population for services to treat distress after abortion. The proposed model included a procedure to pilot-test an intervention to provide post abortion treatment and healing.

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Preface to Manuscript Three

The Manuscript Three reports on the study used to design an intervention. The method was based on the Modeling Phase of the MRC guidelines, the second of five phases for developing complex intervention.

The first part of the Manuscript Three reports on the method that was used in the cross sectional study conducted in the Pre-Clinical Phase. The method describes the participants, the study procedure, evidence of target symptoms, and the results of the Pre-Clinical Phase of intervention development.

The second part of Manuscript Three reports on the analysis and results of the Post Abortion Intervention Questionnaire, which was developed for use in this study. Specifically, the participants provided data of their preferences for an intervention that was acceptable to them. Participants in this study indicated their views for the type of content, format, and scheduling of an intervention to relieve distress after abortion.

MANUSCRIPT THREE

Designing a Patient–Preferred Intervention for Psychological Distress after Abortion

For University Students

Maureen L. Curley, MS, APRN, B.C., PhD (Candidate)
Doctoral Candidate,
McGill University, Montreal, QUE

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The third of three manuscripts submitted in fulfillment of the requirements for the Doctor of Philosophy.

ABSTRACT

Background

This study is the second of two phased-studies to develop an intervention to relieve psychological distress after abortion among university students. The basis for the two studies was established from a systematic review of the literature according to MOOSE standards. The first phased study identified a theory of psychological stress responses to guide the intervention. It also included a cross sectional study to identify population-specific target symptoms of psychological distress after abortion for young women who desired services. The second and current phased-study reports on designing the proposed intervention. Based on the initial phase results, the theory, evidence, and preferences from participants were applied to design the Post Abortion Treatment and Healing intervention. This manuscript reports on the development of the proposed intervention.

Goal

The goal of the second phase, Modeling study, was to design an intervention to relieve psychological distress after abortion that was *targeted* and *acceptable* to university students. Using the results of the preliminary phase, the Modeling phase aimed to structure an intervention to include: (a) the theoretical basis for treating post abortion psychological distress, (b) the empirical basis of symptoms that the intervention targets, and (c) the preferences of the specified population. Then, the model was formatted to fit the delivery within the contemporary nursing practice environments.

Methods

The Medical Research Council (MRC) five-phase guideline for developing complex interventions provided the method for developing the intervention. The first Pre-Clinical Clinical and second Modeling Phases of the MRC guideline were used. In the Pre-Clinical Phase, data were collected from university participants who experienced an abortion, reported distress afterwards, and desired an intervention that was acceptable to them. Using the Pre-Clinical evidence, the target symptoms, dosing, active ingredients, and preferences were developed in the Modeling Phase. Then, guidelines for nursing intervention development were applied to determine the feasibility and delivery of the intervention within nursing practice settings.

Results

This study developed and proposed an introductory model of the Post Abortion Treatment and Healing program as an evidence-based and acceptable psychological intervention to relieve distress after abortion among university students. It proposes a model to pilot-test an initial intervention to treat psychological distress after abortion as a stressful event by stabilizing symptoms, providing support, and optimize coping for those who are distressed after abortion.

Conclusion

The proposed intervention was developed as a model to be tested and delivered to students through the university student health services. If effective, the intervention has the potential to reduce psychiatric morbidity after abortion. In addition, by addressing the conflicts associated with the abortion, it has the potential to reduce the incidence of repeat unintended pregnancy and repeat abortions. From here, the intervention can be pilot tested, and if effective, replicated.

Introduction

Emerging evidence associates abortion with a small increase in psychiatric risks afterwards for a sub-population of women worldwide (Fergusson, Horwood, & Boden, 2009). As a result, researchers are recommending psychological follow up services to be offered to women after abortion (Mota, Burnett, &n Sareen, 2010; Charles, Polis, Sridhara & Blum, 2008; Lancet, 2008). In particular, younger women between 20 to 24 years worldwide appear to experience the highest rates of distress after abortion (United Nations, 2007) of over 30% (Bradshaw and Slade, 2003), as well as the highest rate of repeat abortions of over 40% (United Nations, 2002). Preliminary data suggest that interventions aimed at relieving psychological distress after abortion can be effective. However, it is not known what interventions are most effective, particularly for younger women, as no intervention studies to address this issue were found. Women who experience distress after abortion are an unrecognized and underserved population within healthcare. The rapid proliferation of international post abortion support groups, self-help resources, and web-sites over the past several years underscores this unmet demand for services. Ideally, early intervention could reduce distress after abortion. Moreover, early intervention has the potential to prevent repeated abortion and repeated unintended pregnancy by addressing underlying conflicts that often cause repetitive behaviors. The purpose of this study is to develop and propose a *targeted* and *acceptable* intervention to relieve distress after abortion among university students.

Literature Review

Intervention Studies for Psychological Distress After Abortion

Studies targeting psychological and psychosocial interventions after abortion were searched within online databases including CINAHL, PUBMED, MEDLINE, PSYCH INFO, PILOTS, Cochrane Collaboration, Web of Science, as well as hand searched annotated bibliographies. Search terms included induced abortion, termination of pregnancy, and expanded to perinatal bereavement, perinatal loss, early pregnancy loss, and perinatal grief. Terms were then combined with "intervention studies", "support", "services", "care" and "treatment, counseling", and "grief work". Published and unpublished studies from 1970 through 2010 were searched. No controlled intervention studies for psychological distress after abortion were found. A phenomenological study on women's long-term abortion experiences (Hess, 2004) was the only study found that reported on psychological support services after abortion. The author interviewed N=17 women aged 23 to 60 years who ranged from 6-13 years post abortion. Themes such as integrating the abortion experience, seeking support after abortion, and finding meaning in the abortion experience emerged. Subjects reported both positive and negative aspects of their abortion experience. Hess recommended that post abortion support services that include grief work, bereavement rituals, and spirituality. Most studies that reported on post abortion intervention, focused on medical care after abortion. Lipp (2008) used a grounded theory approach to explore the role of nurses in providing more sensitive post abortion medical service. David et al (2007) conducted a systematic review of post abortion interventions among Russian women to reduce repetitive abortions. The authors focused on interventions that enhanced use of contraceptive services after abortion. They found that the interventions resulted in an increased rate of contraceptive use among Russian women. Despite this, however, the rate of repetitive abortions did not decrease.

Intervention Studies for Psychological Distress After Perinatal Loss

When the search was expanded to include perinatal loss, it was noted that the number of recent studies on perinatal loss, especially that of miscarriage, are increasing. The advent of increased rates of induced abortion including those for psychosocial reasons, those for multiple fetal reductions or those for fetal anomalies may be one reason for this trend of descriptive, and qualitative studies of perinatal loss, especially within the nursing literature. Despite this increase, no well-controlled interventions studies for perinatal loss were found. In a Cochrane Review of randomized controlled trials for psychosocial support for women after perinatal death, Flenady and Wilson (2009) found inadequate evidence to determine whether psychological interventions for perinatal grief improve outcomes. The authors identified specific high- risk groups that are in need of further study: (a) women who lack social support, (b) women who are socially isolated, and (c) women who underwent induced abortion for fetal anomalies. The latter group was in the only study to include induced abortion and the authors reported worse outcomes than those who experienced stillbirth or neonatal death. The authors attributed these outcomes to the particular grief associated with abortion, which is often complicated by feeling responsible for the fetal death, as well as conflict about the pregnancy or the abortion. Flenady et el called for further research and practice to focus on these high risk groups. Attrition was also noted to be a problem. Recommendations include methodologically rigorous studies for vulnerable populations that include effective monitoring of subjects, clear outcome measures, and partner involvement.

Likewise, DiMarco et al (2001) analyzed studies of support for perinatal loss. DiMarco highlighted the need for education and information concerning the grieving process, gender, and cultural differences in grieving, and a shared type of loss within groups. Recommendations included the need for additional research for both short-term and long term follow up over time where grief reactions may change. Several other systematic reviews for perinatal loss interventions found evidence for assisting patients to verbalize and recognize the loss (Brier, 2008), encouraging parents to view the fetus (Sloan et al., 2008; Gold et al., 2007), promoting ritual mourning, photographing the

fetus (Harvey, Snowden, and Elbourne, 2008; Gold et al., 2007), contacting other bereaved parents, maintaining contact with hospital staff (D'Agostino et al., 2008), and increasing overall social support.

Case Reports of Interventions for Psychological Distress After Abortion

While no empirically based evidence was found for post abortion intervention, case reports for treatment after abortion have been accruing. Post abortion intervention approaches that have been reported in the literature use either a direct or indirect approach. Direct approaches include interventions that address the abortion either as a stress response or as perinatal grief. Stress response interventions target the circumstances, associated affect, and cognitive experience of the abortion as a type of stressful event. Increased exposure to addressing the stressor within a supportive environment is considered the treatment of choice for stress responses (Rasmussen and Charney, 2000; Horowitz, 2000). This approach includes the resolution of grief symptoms associated with a stressful event and has been used to effectively treat post abortion distress. Mester (1978) was one of the first to address distress associated with abortion. He noted that, for some, the abortion is traumatic and recommended brief therapy to process negative affect. Likewise, Speckhard (1990) and others (Burke et al., 2002; Ney, 1994; Voight, 1990) suggest post abortion therapy follow a stress and trauma framework including re-experience of negative affect, mourning, and reconciling with the aborted the fetus, and others involved. Coyle and Enright (1997) developed a forgiveness intervention for addressing protracted guilt associated with abortion.

Others emphasize interventions that address abortion within a perinatal grief framework (Angelo, 1992; Gray and Lassance, 2003; Ney, 1994; Shapiro, 1993). Standard interventions for perinatal grief include recognizing the loss, facilitating mourning, and encouraging meaning (Brown, 1993; Canadian Paediatric Society, 2001; Carrera et al., 1998; Leon, 1992) such as ritual mourning (Brown, 1993; Carrera et al., 1998). Applying ritual mourning to abortion distress, McCall & McCall (1980)

reported dramatic relief of symptoms including resolution of anorexia. Gray and Lassance (2003), both nurses, developed a treatment model for reproductive losses including abortions at the Center for Reproductive Loss in Montreal, Canada. Their model includes mourning the loss, finding meaning, and forgiveness. With over 50% of their population post abortive, the authors report the model is effective for reducing grief after abortion based on patient report. Of note is that most of their population is adult women who present 8-10 years after abortion. In contrast, only a few (Fischer, 2000; Stotland, 1998) suggest an approach that avoids the abortion experience.

Professional Practice Guidelines for Treating Psychological Distress After Abortion

Based on the emerging data, there is more recognition of the need for treatment of psychological distress after abortion (Lancet, 2008; Royal College of Obstetricians and Gynecologists, 2004), as compared to previously when distress after abortion was not recognize. In contrast, the World Health Organization guidelines, while recognized the need for effective post abortion counseling in order to reduce the high incidence of repeat abortion in young women (WHO, 2003), lacked both a comprehensive and empirically-based approach. The World Health Organization limits post abortion counseling to focus exclusively on contraceptive counseling rather than including psychological counseling for women after abortion, thereby treating the symptoms rather than one of the many potential causes of repeated abortion Further, in a National Action Plan for Access to Safe Abortion and Quality Post Abortion Care (WHO, 2009), WHO recently updated their guidelines for post abortion care. Surprisingly, the WHO plan neglected to include any recent evidence of the psychological risks of abortion in providing "safe" and "quality" post abortion care. Of significance, is that in addition to WHO and the United Nations Population Fund, the International Planned Parenthood Federation, the largest financial stakeholder worldwide for abortion services, assisted in developing the WHO plan.

In contrast to the WHO abortion guidelines, nursing remains one of the few professions to recognize and incorporate psychological follow up as standard treatment for post abortion care. Nursing Interventions Classification (NIC) includes educating and facilitating the grieving process for women as a guideline for post abortion care (Dochterman and Bulechek, 2004). Likewise, the American Nurses' Association (ANA) has recommended grief counseling as a standard of care within perinatal nursing for all women undergoing abortion (American Nurses Association, 1989). Yet, no information addressing or reporting on these nursing intervention were found. These are among the few professional organizations to recognize and address psychological distress after abortion.

Existing Interventions for Treating Psychological Distress After Abortion

Group workshops from a faith-based perspective and recovery workbook from a political perspective (De Puy and Dovitch, 1997) provided other resources that addressed psychological distress after abortion. As part of reviewing existing interventions, the Principal Investigator obtained permission to attend two popular existing post abortion intervention programs as an observer between 2001 and 2003. These included the faith-based Rachel's Vineyard and Hope Alive programs. The Rachel's Vineyard Program was developed in the United States by psychologist, Theresa Burke. The program is offered over the course of a weekend and delivered by mental health professionals, clergy, and lay persons. Currently, the program conducts 600 retreats per year, within 47 states, and 17 countries which testify to its success. Similarly, the Hope Alive Program was developed in Canada by psychiatrist, Philip Ney. The program targets the psychological distress and grief associated with abortion and types of abuse and is offered on a weekly basis for 33 weeks. The program is currently offered in more than 25 countries by mental health professionals and lay

persons. Both programs are offered throughout the US and Canada. Neither was found in the province of Quebec or in the state of Vermont.

The age range of participants in both programs ranged from mid-twenty to over sixty years with an average age of mid-thirty to mid-forties. Most participants experienced their abortion during the ages of their teens to early thirties. Both programs included men and women. Participants reported a range severity of distress, including suicide attempts and psychiatric hospitalizations subsequent to the abortion. Many participants reported previously addressing their abortion experience within the mental health system. About 50% of participants had experienced multiple abortions. Both programs integrated psychotherapeutic and pastoral principles of care including ritual mourning and reconciliation. Participants reported a range of religious backgrounds, with most having no religious affiliation at the time of the abortion. Participants in both programs reported high satisfaction with each program for recognizing their distress after abortion. Conversely, they reported low satisfaction with healthcare providers that they felt did not**.**

During a meeting with Gray and Lassance (2004), they identified validation of the distress of the abortion and the grieving process as the mechanism of change for their program. No program was found that targeted the needs of a younger population

Knowledge Gap

While preliminary reports on the efficacy of post abortion interventions are encouraging, the data is limited to case reports and qualitative methodologies. Most nursing interventions focused on the medical as opposed to the psychological sequelae of abortion. Further, despite the apparent success of existing programs, no empirical data for their efficacy were found. Intervention data may be lacking due to inconsistent recognition of post abortion psychological distress among professional groups, particularly stakeholders who provide abortion services. No data for well-designed intervention studies for all types of perintal loss, particularly abortion, were found.

A critical gap exists in the knowledge of effective treatment for psychological distress after abortion, especially for younger women. Interventions need to be age appropriate, developmentally sensitive, and acceptable to this population, who can be difficult to engage. Questions include: What types of intervention are needed? When are interventions needed? Is an individual or group format more acceptable? What duration of time is best? Does this population need more intervention concerning education of risks, organized social support, or emotional validation of the distress? What interventions are effective in the short vs. the long term? If there are risk factors for adverse outcome that cannot be mediated, are vulnerable women being adequately informed, screened and monitored after the abortion? Thus, the evidence to treat distress after abortion among younger women is lacking.

Purpose

The purpose of this study was to develop a patient centered intervention (PCI) (Lauver et al., 2002) for psychological distress after abortion among university students. Patient-centered interventions are distinguished in nursing as: (a) responsive to the needs of a particular patient population (Lauver et al., 2002); (b) guided by a well defined conceptual framework that link interventions with patient outcomes (Given, 2004) ; (c) are efficacious; and (d) have clinical utility (Brown 2002). Interventions are patient responsive when they maximize efficacy. Brown (2002) suggests improving efficacy by addressing magnitude of effect, exploring adverse outcomes, and evaluating patient groups that would be most likely to benefit from the intervention.

The Modeling Phase study aimed to design the intervention based on: (a) the target symptoms of psychological distress after abortion among university students from the results obtained in the Pre-Clinical Phase of the study series (b) the content, timing, and format of the preferences of university students who reported distress after abortion and desired services (c) the feasibility and delivery of a nursing intervention that was appropriate for the practice environment of university student health centers

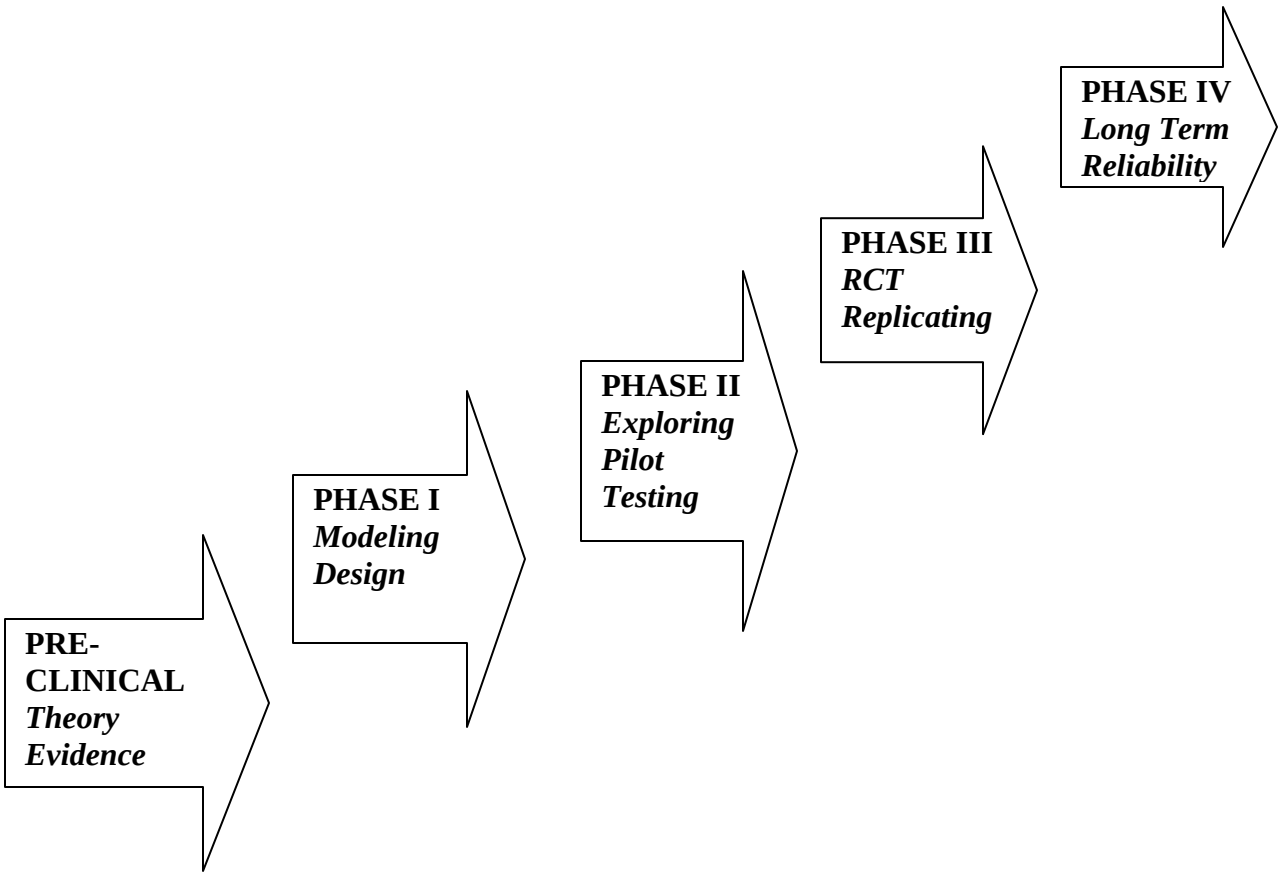
In contrast to existing programs, the proposed intervention was developed:
(a) to target younger women, (b) to include only participants who experienced an abortion as opposed to partners, parents, or concerned others, (c) to restrict participation to those who had experienced an abortion as opposed to those who experienced other types of pregnancy losses, (d) to be delivered by mental health professionals, and (e) to provide a small group format. Then, the intervention was shaped as the evidence, patient preferences, and feasibility became available.

Guidelines for Developing Interventions

United Kingdom's Medical Research Council Guidelines for Intervention Development

The MRC guideline recommended that interventions be developed according to a sequential and progressive strengthening of evidence. This includes: (a) using high quality data, (b) applying relevant theory, (c) pilot testing according to what is unknown, (d) evaluating results, and then (e) implementing the intervention. The MRC framework proposed five consecutive phases. The first phase, the Pre-Clinical Phase (Theory Phase), included determining a theoretical and empirical base. The second phase, the Phase I (Modeling Phase), guided structuring the intervention including evidence for how the active components created mechanisms of change that positively impacted outcomes. The third phase, Phase II (Exploratory Trial Phase), pilot tested the intervention to differentiate the essential factors from modifiable factors of change for replication purposes, as well as for feasibility purposes to compare with other interventions. The fourth phase, Phase III (Randomized Controlled Trial Phase) a randomized controlled trial, compared a developed intervention, which is theoretically and methodologically sound, and able to be replicated, with a comparable alternative intervention. Phase IV (Long Term Implementation Phase) focused on delivering the intervention over the long term, addressed issues such as the fidelity of intervention replication by providers, and achieved consistent results from varied patient populations (MRC, 2000). See Figure III-1. Medical Research Council Phases of Intervention Development as below.

Figure III-1. Adapted from the Medical Research Council's Phases of Intervention Development (Medical Research Council 2000)



Nursing Guidelines for Intervention Development

Next, to tailor the intervention to contemporary nursing practice, the criteria for developing nursing interventions by Whittemore and Gray (2002) were applied. Whittemore and Gray revised the MRC guidelines with greater attention to the design and feasibility phases of intervention development. Feasibility included exploring and evaluating the acceptability and delivery of an intervention within current practice environments, such as the dose, timing, and essential therapeutic factors. Because the socio-political, cultural, and practice environment surrounding abortion shape the delivery of abortion related services, obtaining evidence of acceptability for a first of a kind post abortion psychological intervention within the study sites was a critical first step. Public acceptance, provider readiness, and patient demand needed to be explored. The study determined the design and feasibility issues for nurses to deliver this intervention within university health centers. In addition, the proposed study identified the acceptable dose, timing, and essential components from participants who experienced post abortion distress themselves and desired an intervention.

Complex Intervention Development

Finally, the proposed intervention is a complex intervention. Craig, Dieppe, Mcintyre, Mitchie, Nazareth, and Petticrew (2008) define complex interventions according to the numbers of cohorts, measures, therapeutic interactions and degree of adherence to structure. Craig et al propose steps for developing and determining the efficacy of complex interventions include: (a) a conceptual grasp of the elements, sequencing, and processes of change that can be analyzed for efficacy (b) a method to evaluate and target problems in the delivery of the intervention (c) an acceptance of a range of outcomes, and multiple as opposed to single measures (d) a flexibility to be modified according to different settings. A number of concerns with therapeutic interactions qualified the proposed treatment as a complex intervention. First, abortion is a highly sensitive subject. The disclosure of sensitive subject matter, such as having an abortion, possibly within a group if that is the preferred choice of format, could

result in a range of participant outcomes. Second, treating a population of university students may be challenging due to concerns of commitment to attendance from the beginning to the end of an intervention that may be emotionally arousing, as well as the influence of peers that may minimize abortion related distress. Next, because having an abortion carries psychological risks within this age group, and the processes of change for younger women were not well-defined, maximizing safety and minimizing risk guided the intervention development. Third, participants in the proposed study reported a wide range of distress after abortion from that of mild difficulty in coping to severe distress**.** This can potentially result in a wide range of post intervention outcomes. Fourth, psychosocial interventions tend to be oriented toward concepts rather than tasks, thus requiring a variety of behavioral strategies for implementation. Therefore, strategies needed to be made explicit to both to the provider and to the recipient in order to ensure precision of delivery. Multiple approaches to symptom reduction such as psychological, educational, and behavioral strategies were required for psychosocial interventions. Consequently, the revised MRC (2008) guidelines that included analyzing the elements, sequence, and processes of change as well as the using multiple outcome measures were also applied to the intervention development.

MRC Phases of Intervention Development for the Current Study

For the proposed intervention, the Pre-Clinical and the Modeling Phases of the MRC guidelines for intervention development were used. In the Pre-Clinical Phase a theory was selected. Then, evidence was obtained using a cross sectional study from the participants themselves who report distress after an abortion and desired services. The study asked: What are the characteristics of psychological distress after abortion among university students? What types of patient groups desired and could benefit from a post abortion psychological intervention?

Based on these results, the current Phase I, Modeling Phase study, aimed to develop an intervention. Phases II, III, and IV of the MRC framework were not developed for the proposed intervention and not part of the current study.

Methods

The methods section is divided into two parts, Methods Part I and Methods Part II. : Part I of the Methods reports the on the method for obtaining the results of the Pre-Clinical Phase of the intervention development. It includes the theory, evidence, and a description of the sample used in the cross sectional study. Based on the Pre-clinical results, Part II of the Methods reports on the procedure for the Modeling Phase of the intervention development.

Methods Part I: Background of the Pre-Clinical Phase of Intervention Development

Sample

The Description of the Sample. The sample included university students who were enrolled at McGill University, Concordia University, and the University of Vermont. The Pre-Clinical study included three groups of participants: participants who experienced an abortion, reported distress, and desired treatment (*Abortion Treatment Preferring group*), participants who experienced an abortion, reported no distress, and did not prefer treatment (*Abortion No Treatment Preferring group*), and participants who reported no pregnancy or abortion (Control group).

For the current study, the results are based on the sample of N=45 participants from the *Abortion Treatment Preferring* group. These participants represented the population for whom the proposed intervention was developed. Participants described psychological outcomes, reproductive history, and their preferences for a post abortion intervention that was acceptable to them. The results were used in the current Modeling Phase of intervention development. A complete description of the recruitment, procedure, analyses, and results of the characteristics of the sample can be found in the results of the Pre-Clinical Phase study which are reported in Manuscript Two.

The Demographic Characteristics of Age and Time after the Abortion. Despite the international sample, few demographic differences were noted. Most participants were from McGill University (n=37, 82.2%), were Caucasian (66.7%), and of Canadian citizenship (n=33, 73%). Of these, most were English speaking. The second largest ethnic representation of participants were Asian (n=10, 22.2%). While conservative religious values have been identified as one factor associated with those who report distress after abortion, most participants (n=29, 64.4 %) cited no religious affiliation. Those who did declare a religion (n=12, 26.6%), however, came from Catholic or Muslim traditions, that typically do not support abortion. See Table III-1 for the Demographic Characteristics of Sample by Frequency Distribution as per below.

Within the sample, there was a wide variation in age from 18-35 years, and the standard deviation of almost four years difference indicated heterogeneity relative to age. However, the mean age of 23- 24 years (*M* =23.78 years) was consistent with a younger population. Further, there was a wide range of time reported since the abortion, from several weeks to almost twelve years. All participants experienced their abortion under the age of twenty five. This was consistent with the literature that those under twenty five years of age are at the highest risk for psychological distress after abortion. The mean and standard deviation for the current sample was slightly less than three years since the abortion. This time frame was consistent with a younger population and reflected the target sample among a university population. See Table III-2 for the Characteristics of Sample for Age and Time after the Abortion.

Table III- 1. Demographic Characteristics of Sample by Frequency Distribution

Demographic Variables	Frequency	Percent	Cumulative Percent
SCHOOL			
McGill	37	82.2	82.2
Concordia	6	13.3	95.6
University Vermont	2	4.4	100.00
MAJOR			
Liberal Arts	13	28.9	28.9
Social Sciences	17	37.8	66.7
Health Science	5	11.1	77.8
Science	9	20.0	97.6
Other	1	2.2	100.00
CITIZENSHIP			
Canada	34	75.5	75.5
United States	5	11.1	86.6
Asia	4	8.8	95.4
Eastern Europe	1	2.2	97.6
South America	1	2.2	100.00
RACE			
Caucasian	30	66.7	66.7
First Nation	2	4.4	71.1
African	2	4.4	75.5
Latina	1	2.2	77.7
Asian	10	22.2	100.00
RELIGION			
None Declared	29	64.4	64.4
Protestant	3	6.6	71.0
Catholic	10	22.2	93.2
Muslim	2	4.4	97.7
Buddhist	1	2.2	100.00
ATTEND RELIGIOUS SERVICES			
Never/Rarely	34	75.7	75.6
Occasional	7	15.6	91.1
Regular	4	8.9	100.00
HOUSING			
On Campus	5	11.1	11.1
With Parents	4	8.9	20.0
Off Campus	36	80.0	100.00
PARENTAL EDUCATION			
High School	7	15.6	15.9
Technical School	5	11.1	27.3
College	16	35.6	63.6
MS Degree	11	11.4	88.6
MD/PhD	5	11.1	100.00
TOTAL CASES N=	45	100.00	100.00

Table III- 2. Characteristics of Sample for Age and Time after the Abortion

Variable		N=	Minimum	Maximum	Mean	Standard Deviation
AGE	(Years)	45	18	35	23.78	4.161
TIME POST ABORTION	(Months)	45	0.13	142.00	34.94	34.00

The Characteristics of Pregnancy and Abortion Experience. Several factors associated with the abortion experience and known to increase distress, may have contributed to adverse emotional outcomes among this sample. Although not statistically different compared to the non-distressed women who had experienced abortion, more than 70% of participants (n=32; 71%) viewed the embryo via ultrasound for confirmation of gestational age prior to the abortion. Viewing the embryo actualized the pregnancy and had the potential to cause strong emotional reactions that may have contributed to prolonged distress afterwards. Time frames for viewing the embryo ranged from several weeks to immediately before the procedure. Participant responses to viewing the embryo included comments of wonder, guilt, relief, and horror. These responses were reviewed in collaboration with an expert reviewer, a second advanced practice psychiatric nurse with experience in treating this population. Participant reactions were classified into positive, negative, and neutral reactions to the embryo. Consensus of classification was obtained between the Principal Investigator and expert.

Next, while, most participants experienced one abortion (N=39; 73%) a minority experienced repeated abortions (n= 6; 11%) for a total number of 53 abortions within the sample. Repeated abortions may have been the return of psychological distress from a previous abortion, or stem from repetitive unwanted pregnancies from high risk sexual behavior, or secondary untreated psychiatric, behavioral of substance abuse disorders. Whatever the explanation, the abortion may not have relieved distress, but may have added new distress or compounded existing distress. Third, although

most participants had first trimester abortions (n=43; 96%), a few (n=2; 5%) had second-trimester abortions. Second and third trimester pregnancies have greater physiological and psychological attachment to the fetus, than do first trimester pregnancies. Late gestational abortions can be more emotionally disruptive to women (Rue and Speckhard 1992).

Another factor that may have contributed to distress was that 33% (n=15) of participants had medical complications after the procedure. Physical complications from other reproductive events are known risk factors for the development of postpartum psychiatric disorders (Philip and Clark, 2001). Physical complications after abortion have not been studied relative to post abortion psychological distress. These included reports of severe pain, excessive or prolonged bleeding, surgical infections, and the passing of clots. Four participants (10%) had a medical abortion that required several days to complete. These factors may have contributed to the emotional and physical distress after the abortion. Moreover, two participants reported incomplete abortions and required further surgery. While the differences in the characteristics in the pregnancy and abortion experience were not statistically different between the *Abortion Treatment Preferring* group and the *Abortion No Treatment Preferring* group, a higher percentage of the *Abortion Treatment Preferring* group viewed the embryo and had medical complications after their abortion. See Table III-3 Characteristics of Pregnancy and Abortion Experience below.

Table III-3 Characteristics of Pregnancy and Abortion Experience

Variable	Frequency	Percent %	Cumulative Percent
NUMBER of ABORTIONS			
One	39	73	73
Two	4	7.5	80.5
Three	2	3.7	84.2
Total	53		100.00
ABORTION TYPE			
Surgical	41	91.1	91.1
*Medica*l	4	8.9%	100.00
Number of Procedure Days			
2-3 1			
4 or More 3			
MEDICAL COMPLICATIONS			
Not Answered	7	15.6	15.6
No	23	51.1	66.7
Yes	15	33.3	100.00
ANESTHESIA TYPE			
Not Answered	4	8.9	8.9
Local	15	33.3	42.2
General	12	26.7	26.7
None	14	31.1	100.00
ABORTION LOCATION			
*Hospita*l	12	26.7	26.7
General Clinic	3	6.7	33.4
Abortion Clinic	26	57.8	91.2
Other	4	8.9	100.00
GESTATIONAL AGE			
12 Weeks or Les	43	95.6	95.6
13 Weeks or More	2	4.8	100.00
EMBRYO VIEWING			
Not Answered	1	2.2	2.2
No	12	26.7	28.9
Yes	32	71.1	100.00
Reactions Reported			
None reported	3	9.3	9.3
Positive reaction	3	9.3	18.6
Neutral reaction	12	37.5	56.1
Negative reaction	14	43.75	100.00
Total Reactions	29	100.00	
TOTAL N=	45	100.00	100.00

Measures

The Demographic and Reproductive History Questionnaire were described in detail in Manuscript Two which reported on the cross-sectional study in the Pre-Clinical Phase. Since no instrument to guide the development of a post abortion intervention was found, the questionnaires were developed for use in this study. While the questionnaires were not psychometrically tested, the items have been systematically selected from the literature and from expert opinion for both content and process. The questionnaires used a multiple-choice, fill in the blank, and checkmark response format. The Demographic Questionnaire surveyed identifying characteristics of the sample such as age, school attended, years of education etc. The Reproductive History Questionnaire described characteristics of the pregnancy and abortion experience. The Post Abortion Intervention Questionnaire solicited participant preferences for a post abortion psychological intervention within the context of the student university health services**.** See Appendix A. Questionnaires. This manuscript focuses on the analysis and the results of the Post Abortion Intervention Questionnaire.

The Post Abortion Intervention Questionnaire

The Post Abortion Intervention Questionnaire surveyed the format, timing, and content of an intervention to relieve psychological distress after abortion from a university sample**.** The Post Abortion Intervention Questionnaire surveyed seven content areas from which subjects selected according to what their preferences for an intervention. The content items were derived from existing interventions, the literature, and filling current gaps. Each item was selected according to frequency, analyzed and modified for appropriateness as a psychological intervention, and tailored toward a younger population. All sections included the opportunity for participants to write in their own preferences, if their choice was not included. In addition, this option was verbally encouraged for each participant when the questionnaire was administered. The items included: (a) assist with grief and loss issues associated with the abortion, (b) assist with improving coping skills after abortion, (c) assist with addressing guilt associated with the abortion, (d) assist with addressing spiritual issues associated with

the abortion, (e) assist with pregnancy prevention issues, (f) receiving education related to post abortion psychological distress, and (g) sharing the experience with others who choose to focus on abortion.

The format items included selecting the best days and schedule for an intervention to be offered during the academic year such as on a weekend, partial weekend, weekday, or write in options, as well as specifying morning, afternoon, or evening. The timing items included checking off a range of time frames after the abortion when the intervention would be most helpful from immediately to more than a year after the abortion.

The content items of grief, loss and guilt were derived from the literature (Burke, 2003; Gray and Lassance, 2003; Coyle and Enright, 1997: Angelo, 1994; Ney, 1994; Shapiro, 1993, Vought, 1990) and analyzed for face validity. Face validity for the items of "spirituality", "grief" and "sharing" were derived from the most popular post abortion healing programs (Burke and Cullen, 1995; Ney, 2000) The item of spirituality was modified to fit a healthcare context. The item of "grief" was also derived from the Center for Reproductive Loss in Montreal (Gray and Lassance, 2003). The process item of "sharing the abortion experience" within a group format was derived from providers who view the abortion as a stressful event that requires a narrative processing (Burke, 2003; Mester, 1978; Ney, 2000; Speckhard, 1990). The process items of "improving coping" and "education about the symptoms of post abortion distress" were added to address a younger population In keeping with a health-based approach, content items from a political or faith approach to abortion were dropped. Process items that were not conducive to a university population were dropped as well. A Pearson Correlation showed that the items were minimally to moderately correlated within a range from r = 0.023 to .500, with most item values ranging from r = .334 to .411. Internal consistency was examined using Chronbachs' alpha with a coefficient of 0.242, which was considered a low inter-item correlation. This may have been due to the low number of items, as well as the multiple dimensions included. Further testing and refining of the questionnaire is recommended. An Exploratory Factor Analysis was performed on the content which is reported in the results section and specified four content areas.

Methods Part II: The Modeling Phase of Intervention Development

The Modeling Phase guided the design of the intervention. The proposed intervention was developed as the theory, evidence, patient preferences, and feasibility became available. A preliminary model of the proposed intervention was developed on the theoretical basis of the data gathered in Pre-Clinical phases. Then, the preliminary intervention was revised to the proposed intervention based on the evidence and preferences from the results of the initial phase study. The procedure used to model the intervention is described below:

(1) The theoretical basis for the intervention was determined in the Pre-Clinical Phase of Intervention Development

Several theoretical frameworks from the literature guided intervention development. Horowitz's Theory of Stress Response Syndromes (Horowitz 1977; 2000) provided the main theory to explain psychological distress after abortion. This theory also provides the underpinnings for the diagnostic criteria for the stress related disorders that are included in the Diagnostic and Statistical Manual of Mental Disorder Text-Revised IV (American Psychiatric Association 2001). Stress responses are broad enough to include psychiatric disorders that have been reported after abortion such as adjustment disorders, depressive disorders, and anxiety disorders. Further, stress responses include sub-clinical responses from mild to moderate distress after abortion that may not meet DSM- TR IV diagnostic criteria.

Next, psychological distress after abortion has been described as a type of perinatal loss. Thus, psychological interventions aimed at treating stressful events and perinatal loss contributed to the theoretical basis of intervention development. Further, both concepts of psychological stress and perinatal grief were supported by the evidence obtained from participants who reported distress after abortion in the Pre-Clinical Phase of the intervention. of below.

(*2) Mechanisms of the intervention were extracted from existing interventions that treat psychological distress after abortion*

Second, some strategies were derived from existing nursing and post abortion psychological interventions. These included the group format, the week-end schedule, grief work for perinatal loss, and the recognition of spiritual distress associated with the abortion experience. F**a**ith-based approaches to post abortion healing recognized the spiritual distress associated with abortion by providing acceptance, reconciliation, and ritual mourning within the context of religious traditions, which conventional health care does not. Specifically, it appears that the spiritual processes of forgiveness and reconciliation with those associated with the abortion, particularly the fetus, reduce guilt and bring resolution to the abortion experience. Recognizing the need to address spiritual distress as a universal experience for many women regardless of their religious background, the proposed intervention included providing spiritual support, without a particular denominational designation, as an active ingredient. The provision of spiritual support is a standard nursing intervention to address spiritual distress, and includes the instillation of hope. Further, in the Pre-Clinical Phase, participants identified assistance with spiritual distress as a type of assistance that they requested.

(3) The proposed intervention was modeled on the delivery and appropriateness within the current nursing practice environment

Third, the controversial nature of abortion and novelty of the proposed intervention required that issues of feasibility and delivery be determined. These were addressed by gathering input from as many stakeholders in the intervention at each study site as possible. The Principal Investigator met with and explained the study to the nursing staff, counseling staff, psychiatric services staff, and women's health center staff at the study sites of McGill University and the University of Vermont student health centers. In addition, the PI met with the nursing staff from Concordia University. The three directors of the student health centers recognized the need to improve support services for students after abortion. The directors included two primary care physicians, one nurse practitioner, and one nurse administrator. All desired to continue participation in the intervention development to include a future pilot testing phase of the intervention.

Further, the fit of the proposed intervention into the contemporary nursing practice environment was determined Applying nursing concepts from the International Nursing Classification (ICN 2002) and the Nursing Interventions Classification (NIC) taxonomies shaped appropriateness for delivery as a nursing intervention. Six nursing phenomena of concern related to post abortion psychological distress were considered in developing the model as an intervention to treat psychological distress. These included knowledge deficit of post abortion stress, ineffective coping, the risk for post-trauma response, grief, guilt, and spiritual distress. Perinatal loss is well recognized in nursing and used to resolve distress after abortion (Gray and Lassance, 2004).

Preliminary Model of the Post Abortion Treatment and Healing Intervention

Based on theoretical factors, a preliminary model of an intervention was developed. The preliminary model of the Post Abortion Treatment and Healing Program included seven modules designed for a group or individual format. A group format provides the therapeutic benefit of universality, identification, and social support. Each module targets an area of concern and includes: (1) psycho-education of psychological distress after abortion, (2) skill building (3) narrating the stressful event (4) facilitating grief (5) resolving guilt (6) preventing future pregnancy, and (7) providing spiritual support such as instilling hope.

(4) The target symptoms were based on evidence obtained in the Pre-Clinical Phase of the intervention development

Then, evidence obtained from the data collection of participants for whom the intervention was intended identified the target symptoms of distress. Target symptoms were determined by comparing the psychological outcome among the participants who preferred treatment after abortion, participants who preferred no treatment after abortion, and never pregnant controls. The results found that participants who preferred services after abortion had greater psychological stress and perinatal grief associated with the pregnancy and abortion experience than did participants who preferred no treatment after abortion. A MANCOVA analysis found that after adjusting for co-existing psychopathology, participants who preferred treatment for psychological

distress after abortion had significantly higher symptoms of psychological stress specific to the abortion on the Impact of Event Scale (IES) when compared to participants who preferred no treatment after abortion (mean scores = 26.9; 95% CI 23-30 vs. 16.8; 95% CI 12-21. p<.001). Summed scores on the IES greater than 26 indicate severe symptoms of a stress response for those who preferred treatment.

In addition, those who preferred treatment had significantly higher symptoms of perinatal grief on the Perinatal Grief Scale (PGS) after adjusting for co-existing psychopathology (mean scores = 62. 5 95% CI 58.-67 vs. 50.8; 95% CI 45- 56.1, p<.001) than did those who preferred no treatment. Summed scores on the PGS range from 33 to 155 with scores greater than 90 suggesting severe pathology. The mean score above 60 among those who preferred treatment suggested a moderate intensity of perinatal grief. Thus, the target symptoms of psychological distress after abortion for intervention include the primary symptom of severe psychological stress followed by the secondary symptom of moderate perinatal grief.

This finding supported that of others who suggest that for some women, emotional distress after abortion may be attributed to factors associated with the pregnancy or abortion itself (Fergusson, 2009), rather than from existing mental health problems (Robinson et al., 2009). All participants in the treatment preferring group desired services to address the pregnancy and abortion experience if such services were available at that time.

(5) The content, format, and timing of the proposed intervention were based on patient preferences derived from the Post Abortion Intervention Questionnaire

The results of the Post Abortion Intervention Questionnaire were analyzed to determine the content, format, and timing of an intervention that the participants preferred. The content results were analyzed through Exploratory Factor Analysis (EFA). EFA was used to determine the essential factors and underlying structure of a desired intervention. Then, the factors were rank ordered according to priority of patient preference. The results of the preferences for the format and timing of the intervention were analyzed though descriptive statistics and determined by items with the highest frequency distributions.

Content of a Preferred Intervention

In order to reduce the dimensions of the content of an intervention, an Exploratory Factor Analysis was performed on the items of the Post Abortion Intervention Questionnaire. The PAWS SPSS version 17.0 Principal Components Program was used. Several analyses were performed to determine the best fit. In the first analysis, four 4 components were produced with communalities > .70. See Figure III-2 A. Communalities. The components included assist with SPIRITUALITY (.836), assist with PREGNANCY PREVENTION (. 813), assist with GUILT (.754), and assist with GRIEF (.740). The Kaiser rule indicates that the when the number of variables are < 30, and the communalities are > .70, the number of components can be reliably determined (Stevens, 1996). The analysis produced four components with Eigen values > 1.0 and explained 71% of the total variance. Factor 1, SPIRITUALITY, accounted for 22.8 % of the variance, Factor 2, PREGNANCY PREVENTION, accounted for 17%, Factor 3, GUILT, accounted for 16%, and Factor 4, GRIEF accounted for 14% of the partitioned variance. See Figure III-2. B. Total Variance Explained. On examination, the Scree Plot, however, showed a minimal descent after the first component, an early break point and then leveling off after the second component, suggesting more of a linear relationship among factors 2, 3, and 4. . See Figure III-2. C. Scree Plot.

Then the components were rotated according to a Varimax application. Rotated Factors 1, 2, 3 and 4 emerged as statistically well-defined with factor loadings >.70. See Figure 3. D. Rotated Component Matrix. Comrey and Lee (1992) suggest that factor loadings > .71 are excellent, .63 very good, .55 good, .45 fair, and .32 poor. Factors 1-3 have excellent loadings, and Factor 4 has very good to excellent loadings. This reflects conceptual homogeneity among the four factors**.** In addition, each Factor emerged with 2 items accounting for most of the variance. Further, several items were more process oriented items than content oriented items, such as assist with EDUCATION, SHARING, and COPING. On a practical level, these items are strategies that would be applied in order to relieve some content items. It appeared that some content and process items loaded together on a single factor and maintained internal consistency.

The first rotated factor, Factor 1 emerged with a high desire for assist with GUILT (0.844), a content item and high desire for assist with education around post abortion DISTRESS (0.773), a process item. Conceptually, this can be considered DISTRESSING GUILT, where guilt is the construct and the desire for education about this is a strategy that can potentially help to relieve it. The educational dimension of this factor suggests that subjects may have experienced unanticipated, and unexpected level of guilt, for which they may not have been prepared, thus requesting education about how to manage these symptoms. Moreover, distressing guilt is consistent with the phenomena of "survivor guilt" a common clinical manifestation of psychological stress disorders among those who either actuality or symbolically have contributed to the harm of another.

The second rotated factor, Factor 2 showed excellent loadings for a bipolar effect for high positive value for assist with PREGNANCY PREVENTION (.869) and a high negative value for assist with GRIEF (-.708). These factor loadings suggest a desire for assistance with pregnancy issues, with a focus on preventing further pregnancies, as opposed to grieving the target pregnancy, the latter of which may need to be avoided temporarily. In this developmental stage, students may not consider themselves in the parental role. Moreover, often young women do not have the emotional maturity to engage in the affective processing or grief work associated with pregnancy loss, yet they still remain distressed. Among this population, an early and un-timed pregnancy is often experienced as a type of failure. Thus, preventing future pregnancies and abortions can be considered an attempt of mastery over this failure and successfully assuming responsibility Factor 2 can be re-named REPRODUCTIVE MASTERY.

The third Factor shows a second bipolar effect with a high desire for assistance with COPING (.783) and a negative desire, or avoidance for SHARING of the abortion experience (-.710). Whereas most participants indicated a preference for an intervention within a group format that focuses as opposed to avoids the abortion experience, this loading reflects a desire to enhance coping without, perhaps, being required or expected to disclosure their abortion experience. Participants may want to cognitively, behaviorally, or psychologically learn new skills as opposed to affectively

express their abortion experience in order to improve coping. This also may suggest a desire to independently manage as opposed to rely on others. This factor can be re-named INDEPENDENT COPING.

Factor 4 shows a single high loading for assistance with SPIRITUALITY (.909) and a fair to poor loading for GRIEF (.447). This loading suggests a preference for assistance with spirituality concerning the abortion. For this age group, spirituality may have broad implications. Further, issues of death and loss, such as losing the pregnancy, often has universal and transcendent implications. However, the low loading on GRIEF may suggest that GRIEF not be the focus for assistance with SPIRITUALITY. This factor could be retained as SPIRITUALITY.

The Scree Plot in the first four-factor analysis lacked a sharp descent, and a leveling of several of the factors. A two and three-component hypothesis was tested to ensure that the best fitting analyses was used. Moreover, the ratio of components to variables is higher than desired. Ideally, a component to variable ratio, or Q/P ratio of <. 30 is preferred. In the case of four components, the Q/P ratio is 4/7 = .57. Given these conditions, a two and three factor hypotheses was tested. A second analysis used a Principal Components program with a three component restriction. The Q/P ratio for this analysis for 3 component to / 7 variables = 0 .42, which continues to be above the .30 value. Three factors produced communalities of PREGNANCY PREVENTION (.768), Guilt (-.714), and DISTRESS EDUCATION (.700), and accounted for 56% of the total variance. Rotated factors included factor 1 with GUILT (.823), and DISTRESS EDUCATION (.788), factor 2 with GRIEF (.737) and PREGNANCY PREVENTION (-.852), and factor 3 COPING (.666) and SHARING (-.632). A third analysis was performed in order to test a two components hypothesis. The two-factor hypothesis resulted in the Q/P ratio of < .30, as the ratio of 2 components to 7 variables = 0.28. A Principal Components analysis with a 2 factor restriction was performed. This analysis accounted for 40% of the total variance, with PREGNANCY PREVENTION (.687) as the first factor accounting for 23% of the variance and DISTRESS EDUCATION (.650) as the second factor for 17% of the variance. There were no communalities > .70. When these were rotated, factor 1 emerged as DISTRESS EDUCATION (.797) and

GUILT (.599). Factor 2 emerged as PREGNANCY PREVENTION (.828) and GRIEF (-.763).

Whereas, the four factor analysis satisfied the Kaiser criteria, as well as accounted for the greatest amount of total variance, the four factor analysis guided the development of the interventions, in spite of the results of the Scree Plot. Conceptually, these factors fit the theoretical model. This included the components of Factor I DISTRESSING GUILT, Factor II REPRODUCTIVE MASTERY, Factor III INDEPENDENT COPING, and Factor IV SPIRITUALITY.

Format of a Preferred Intervention

Descriptive statistics were used to analyze the timing and format of an intervention. Most participants requested an intervention delivered in a group format and were asked whether a large (nine members of more or a small group format (eight members or less) was preferred. Slightly more than half of the sample (51%) desired a large group format. Participants desired an intervention that was conducted by professionals (98%) as oppose to peers, and several wrote in preferences for providers who "understood", "specialized", or had an "expertise" in post abortion issues. The next highest preference was for a combination of a group and individual intervention (20%). The least preference (18%) was for individual interventions. Most participants (68%) preferred that the intervention be held on a weekend schedule from Saturday morning through Sunday afternoon, leaving time on the weekend for studying as needed. See Table III-4 Format for A Preferred Psychological Intervention After Abortion. as below.

Timing of a Preferred Intervention

The majority of participants (80%) indicated that they would have wanted services to have been available from immediately afterwards up to eight weeks post abortion. This suggests that for most students, the psychological distress that was experienced after the abortion was the most acute right after the procedure, and then their distress appeared to partially remit over time.

Determinants that May Modify Abortion Distress

Of significance, was that most participants reported that they received no pre-abortion counseling (n= 30, 66.7%), nor any post abortion counseling (n= 39, 86.6%). While 51% accessed internet based resources, only 20% accessed post abortion self help, or psychological resources. Peer support appeared to play an important role for 66.6% of participants while 20% reported that medical professionals appeared the least helpful. See Table III-5 Determinants that may be Modifiable to Intervention

Table III-4 Format for A Preferred Psychological Intervention After Abortion

Variable	Frequency	Percent %	Cumulative Percent
DELIVERY FORMAT			
Individual Counseling	8	17.8	17.8
Group 9 or More	23	51.1	68.9
Group 8 or Less	3	6.7	75.3.
Student- Lead Group	1	2.2	77.7
Individual & Group	9	20.0	100.0
INTERVENTION SCHEDULE			
Fri PM to Sun PM	12	26.7	26.7
Sat AM to Sum PM	19	42.2	68.9
Weeknight	6	13.3	82.2
Weekend Half Day	8	17.7	100.00
TIMING OF SERVICE			
Up to 8 wks post abortion	36	80.0	80.0
3-6 months post abortion	5	11.1	91.1
7-12 months post abortion	3	6.7	97.8
After 1 year post abortion	1	2.2	100.00
OTHER SERVICES			
Not Applicable	16	35.6	35.6
Better pre-abortion counseling	7	15.6	51.1
Better post abortion counseling	13	28.9	80.0
Improved staff Sensitivity	3	6.7	86.7
Contact w/ other *who had abortion*	2	4.4	91.1
More time and options Counseling	4	8.9	100.00
TOTAL=	45	100.00	100.00

Table III-5 Determinants that may be Modifiable by an Intervention

Determinant	Frequency	Percent %	Cumulative Percent
HAD PRE-ABORTION COUNSELING			
No	30	66.7	66.7
Yes	15	33.3	100.00
HAD POST ABORTION COUNSELING			
No	39	86.6	86.6
Yes	6	13.3	100.0
USED INTERNET RESOURCES			
No	23	51.1	51.1
Yes	22	48.9	100.00
USED SELF-HELP RESOURCES			
No	43	95.5	95.5
Yes	2	5.00	100. 00
USED PSYCHOLOGICAL RESOURCES			
No	38	84.4	84.4
Yes	7	15.6	100.00
BEST COPING USED			
None	3	6.7	8.1
Talking	9	20.7	32.4
Moving on	13	28.9	67.6
Other	12	26.7	100.00
PERSONS WHO WERE MOST HELPFUL			
None	2	4.8	4.8
Pregnancy Partner	15	33.3	45.9
Friend	15	33.3	89.2
*Family Membe*r	2	4.4	93.6
Medical Person	1	2.2	95.8
Other	2	4.4	100.00
PERSONS WHO WERE LEAST HELPFUL			
None	9	45.9	45.9
Pregnancy Partner	7	15.6	61.5
Friend	*2*	4.4	65.9
*Family Membe*r	8	17.8	83.5
Medical Person	9	20.0	100.00
TOTAL N=	45	100.00	100.00

(6) The dosing and active ingredients of the proposed intervention were based on evidence and patient preferences from the results of the Pre-Clinical Phase

Dosing of the Intervention

The dosing and active ingredients of the proposed intervention were determined by the severity of psychological distress associated with the abortion reported by the participants, and by a goal to maintain the functional status of university students. At the time of the data collection in the Pre-Clinical Phase study, all participants were functioning satisfactorily as university students. In keeping with this, the results from the General Health Questionnaire indicated that only 20% of participants reported an existing mental health problem (n=10, 22.2%). Of concern however, was that 42% (n=19) of participants reported that they had contemplated or attempted suicide at some point in their lives. Moreover, of these, over 30% did so after the abortion. The instances of suicidal behavior after abortion were consistent with the literature (Mota et al., 2010; Fergusson et al., 2006; Morgan et al., 1997; Gissler et al., 1996). While the timeframe of suicide tendency after abortion is not known, and may not be directly related, it nevertheless needs to be considered in developing and delivering an intervention that addresses the abortion experience.

These data required that the intervention have controlled dosing of the active ingredients for ensuring safety and minimizing the risks. Controlled dosing suggested delivering the intervention as an early or initial intervention. Initial interventions aim to strengthen internal resources before progressing to disclosing, uncovering, and processing the distressing content. The proposed intervention followed a preliminary intervention approach for the prevention and initial treatment of distress after abortion. Treatment guidelines from the National Center for Post Traumatic Stress Disorder (PTSD) in the United States suggested preliminary interventions aim to improve functioning, stabilize symptoms, identify healthy supports, and encourage adaptive as opposed to maladaptive behaviors (Litz and Maguen, 2007). Further, a recent conference on the state-of-the-art treatment of psychological trauma promoted an evidence-based, phase-oriented approach (Harvard Medical School, 2008). Phase-oriented treatment for psychological stress followed a step-wise dosing of treatment

according to participant readiness. This included first improving coping, managing affect, and enhancing both internal and external resources of patients before then going on to the disclosing, processing, and resolution of stressful material.

Therefore, in keeping with the fact that some participants had a history of suicide, the proposed intervention adhered to a phase-oriented approach to resolving the distress of the abortion**.** A phase-oriented approach included that the proposed intervention provided an initial phase of treatment to reduce current distress, minimizing further distress, and maximize functional status. As an initial phase of treatment, the intervention focused on managing the emotional distress associated with the abortion, enhancing internal coping, and increasing external resources. Psycho-education about post abortion psychological distress, skill building, and promoting further pregnancy prevention composed the essential elements of an initial phase of treatment to reduce abortion distress. Within this initial phase, participants would be encouraged to first complete the group psychotherapy intervention, and then progress to processing the abortion experience within individual psychotherapy. Fully disclosing the abortion experience, processing associated affect, and uncovering repressed aspects of the abortion experience would be considered later phases of treatment.

Active Ingredients

The active ingredients included strategies that were derived from the evidence and patient preferences that relieved the target symptoms of a severe psychological stress response, specifically the "survivor guilt" associated with ending the pregnancy. While there was also evidence of a moderate level of perinatal grief among participants, grief was not endorsed as a preferred area for treatment. Rather, the active ingredients aimed toward the nucleus of "distressing" and "unanticipated" survivor guilt. Essentially, three domains of ingredients target this nucleus for treatment, the affective, cognitive, and spiritual domains.

The affective domain of active ingredients include initial stress relieving strategies aimed at soothing distress, reducing shame, and breaking secrecy such as: (a) recognizing, validating, and managing distressing affect associated with the pregnancy

and abortion and (b) providing an environment of privacy, confidentiality, peer support and professional expertise.

The cognitive domain of active ingredients includes imparting information to enable more adaptive cognitive processing of the pregnancy and abortion including: (c) psycho-education of post abortion psychological distress in order to normalize symptoms, (d) enhancing internal and external resources through skill building, identifying support structures, and (e) promoting responsibility for future pregnancy prevention in order to gain reproductive mastery.

The spiritual domain aims to reduce guilt by increasing a sense of self-acceptance, forgiveness, and hope through (f) providing spiritual support, (g) reducing isolation through a shared experience with others and (h) future renewal for either putting the issue behind them for a time or for further processing of the abortion within a later phase of intervention, such as individual therapy.

Variables that May Modify Abortion Distress

Distress after abortion may be influenced by a number of external contextual variables associated with circumstances surrounding the pregnancy experience, the abortion experience, and after the abortion that may be modifiable. Variables such as the degree and quality of social support, the education of post abortion sequelae, and the availability of post abortion resources may influence participant emotional responses after abortion.. Addressing these variables within an intervention that provides peer support, informational support, emotional support from caring health professionals has the potential to relieve, reduce or prevent worsening of distress after abortion.

(7) The feasibility and delivery of the proposed intervention were determined by patient preferences and the input from university health center staff

The desire of university health center leadership to participate in developing the intervention and to participate in efforts of future pilot testing was critical to its success. Input from university health center staff was integrated into developing the intervention. These included issues of delivery such as identifying key staff who desired to participate in intervention, ensuring culturally relevant services to address the needs of international students, coordinating care and follow up services with primary care, mental health, and nursing services both prior to and after the proposed intervention, and the need to improve alternatives to abortion, pre-abortion counseling, and post abortion outreach.

Other factors of feasibility included cost, economic use of the time and resources of university health center staff, and the need to avoid redundancy or duplication of efforts by university counseling, psychiatric, or nursing services that were treating students who were distressed after abortion in varying ways. The university health centers reported that the proposed intervention filled an unmet need for treating their students.

Results

The original intervention was revised and remodeled based on the results of the Modeling Phase. These revisions included the following changes:

1). The target symptoms of the intervention were changed from "stress" and "grief" to include "stress" as a primary symptom, with a particular focus on "survivor guilt" The lack of participant endorsement for assistance with grief in the current study may have been influenced by the large number of participants who viewed the embryo and wanted to avoid addressing it. Contrariwise, however, participants showed evidence of moderate levels of perinatal grief in the Pre-Clinical Phase**.** Other groups may or may not desire assistance with grief. For these reasons, a grief module was maintained on an as needed basis.

2). Following strong participant preference for wanting assistance with guilt, the content areas were re-modeled to include specific modules for "unanticipated guilt", "preventing a repeat pregnancy and abortion" and 'resolving spiritual distress".

3). The process module for coping was re-modeled to address the patient preferences for "independent coping" by adding strategies to build coping skills.

4). The dosing of the intervention was changed from an intermediate intervention that facilitated moderate to high arousal in disclosing, processing, and resolving a stressful event to a phase-oriented approach that provided an initial phase of a supportive intervention that facilitated low arousal, controlled dosing, and high structure. Each participant would be encouraged to identify a particular aspect of their distress on which they would focus the intervention. The proposed intervention would provide the foundation for a later phase intervention for processing the abortion.

5). While some participants (18%) preferred the intervention to be delivered on an individual basis, it was not strongly endorsed. Further, the feasibility of cost, time, and the staff resources favor at least initially delivering the intervention within a group format. In addition, the therapeutic factors of a group structure provide a potent ingredient for distress reduction by validating, normalizing, and accepting the abortion experience. Once the intervention is tested and proves efficacious, then staff can be trained to deliver the intervention in either the initial phase of a group format or in the later phase of an individual format. Until then, individual counseling, nursing and psychiatric services can be offered in coordination with the group intervention.

6). The intervention was revised according to patient preferences from a small to a larger group format of greater than nine members. A larger format was consistent with a lower tendency for disclosure and arousal and a greater capacity for structure. Further, a larger group provided less intimacy among members and supported the stated preference for more independent coping.

Discussion

This study proposed an introductory model of an evidence–based intervention according to the preferences of the population for whom it was designed. Young women who preferred treatment after abortion readily identified their desires for a intervention that appeared to be reasonable, feasible and timely. One noteworthy point that this study highlighted was the specific issue of survivor guilt for which women desired professional help. To this writer's knowledge, no such study has identified this need to date.

While participant motivation and provider acceptance appear ready, several issues concerning the delivery of the intervention need to be addressed. First, there was a wide range of time since the abortion among participants ranging from those who had an abortion within a few days of the interview to those that had an abortion years prior to the interview. These subsets may reflect acute versus chronic psychological distress after abortion, and require different treatment approaches**.** Further, there was a wide range of ages and developmental levels among participants, as well. Both factors were consistent with patient populations of other programs which presented similar challenges in delivering the intervention. Yet, according to those who provided post abortion interventions who were interviewed, a common denominator was that the intervention presented the first time for many participants to discuss their abortion experience in depth. This shared experience appears to supersede chronological or demographic differences among participants. This fact was underscored by the participants used the interview of this study to disclose and discuss their abortion experience. Recognizing these factors, the proposed intervention included individualizing the intervention as much as possible by encouraging each participant to determine their own targeted areas of concern and to determine their own goals for the intervention.

A second issue that was relevant to delivering the intervention was the impact of viewing the embryo as a contributor to the participants' distress. In addition to younger age, factors that have been identified as contributing to higher rates of psychological distress after abortion in the literature included multiple abortions, later trimester

abortions, experiencing medical complications during the abortion, and having an affiliation with a religion that prohibits abortion. Most participants reported none of these factors. In contrast, this sample reported that over 70% of them had viewed the live embryo via ultrasound prior to termination. Viewing the embryo may have underscored the reality of the pregnancy for some which contributed to distress. These factors emphasized the need to conduct a full and comprehensive screening interview concerning the abortion and pregnancy experience before participants are to be enrolled in an intervention. As such, the full knowledge of factors that may have contributed to distress can enable those who deliver the intervention to manage the level of affective arousal.

More specifically, assistance with guilt was the primary symptom to be targeted in the proposed intervention. Consistent with other types of stress disorders, the experience of guilt can be understood as that of 'survivor guilt'. Survivor guilt as applied to abortion suggested that some women felt guilt in choosing their own survival over that of the fetus (Speckhard and Rue, 1992). Moreover, the graphic impact of viewing of the embryo may have heightened guilt. Distressing levels of guilt for those who viewed the embryo may have contributed to the high incidence of contemplating suicide after abortion among the participants in this study

Surprisingly, following the strong desire for assistance with guilt associated with surviving the fetus, assistance with grief was not part of the preferred intervention. The lack of attention to grief may reflect the developmental level of a younger population who are more self-centered than other-centered, as was developmentally appropriate, and not have the maturity to psychologically attach to a pregnancy. Alternatively, the strong feelings of guilt may have blocked feelings of attachment and subsequent grief. A third explanation may be that viewing just prior to terminating the embryo may have complicated the attachment process. Finally, viewing the embryo may have initiated a grieving process for some so that assistance was not needed.

A third concern was for assistance in education for post abortion psychological distress. A desire for increased information and understanding of psychological distress after abortion suggested that some participants may not have been prepared for the presence, degree, or persistence of guilt that they experienced in having the abortion.

The request for better counseling before and abortion adds further evidence of this need. Assistance with more effective coping, pregnancy prevention, and spiritual issues associated with the abortion suggested the need for more effective educational and preventative efforts both prior to and after the abortion.

Finally, while most participants desired a weekend schedule, others desired a schedule offered during part of the weekend or during the week. Further, participants desired a combination of group and individual format. For these reasons, the intervention was structured according a series of sequential modules that can be offered in flexible ways. However, the group format was recommended for maximal benefit and feasibility for delivery within student health services

Clinical Implications

The proposed intervention presents an introductory model for a post abortion psychological intervention to be pilot-tested among a university student population. The study highlighted the need for an intervention to address psychological distress after abortion among university students. While the short term goal aims to reduce psychological morbidity and mortality after abortion, the longer term goal aims to prevent repeat unwanted pregnancies and unwanted abortion within this population. If the intervention is effective, this clinical service has the potential to improve the health and well being of a large number of women. Once the pilot phase of the intervention has demonstrated sound theoretical grounding and evidence, and feasibility issues relative to delivery have been addressed, the intervention can be tested on a larger population, and eventually replicated.

In addition, future research is needed to evaluate the impact of viewing the embryo on subsequent levels of post abortion psychological distress among other samples of women. Those who provide abortion may want to improve women's preparation for viewing as well as offer follow up support or monitoring afterwards. Further, longer time frames between seeing the embryo and undergoing the abortion procedure may be indicated for abortion decision-making as well as for better adjustment to the abortion afterwards.

Finally, healthcare providers have an obligation to provide comprehensive services to women after abortion. These services need to include improving informed consent on the potential psychological risks of abortion, monitoring emotional responses after abortion, and providing follow up psychological c care as required.

Limitations and Bias

There are several limitations to the proposed intervention development. First, the participants in the study were a self selected sample. It may not be representative of the level or type of distress that students experience after abortion nor the type of interventions that other students would like to relieve their distress. Other symptom clusters of distress may not have been captured in the analysis, such as mood, anxiety, or behavioral factors that may be distressing and that are not yet known. Second, confounders that contribute to distress may in fact not be modifiable to intervention, and the intervention may produce no results. There may be confounders that contribute to distress that have not been identified, or may be interacting among a number of variables.

As a psychiatric nurse, the investigator is familiar with and has clinical experience in identifying and treating symptoms of post abortion psychological distress. Thus, in order to control for the potential for investigator bias in overestimating reports of participant distress, a research assistant performed most of the data entry, including transcribing the qualitative reports of participant comments in viewing the embryo. In addition, reports of viewing the embryo were further controlled by reviewing and classifying the comments with another psychiatric nurse practitioner who has treated this population. Finally, control was implemented as the study and the study amendments received approval from the McGill University IRB for five years. This included approval for both study sites.

Conclusions

In conclusion, evidence supported the need and desire for professional help after abortion among some university students that is not offered to date. In an environment of secrecy, silence, and stigma surrounding abortion, the impact of a confidential, validating, peer supported and professionally conducted intervention to address psychological distress associated with abortion cannot be underestimated. Because of this, the healing environment itself may be the major active ingredient for change. This is consistent with Florence Nightingale's origins of nursing that suggested when the environment is conducive to healing, nature takes its course. More specifically, the mechanisms of change directly correspond to the needs that participants themselves identified. These processes include healthcare professionals providing psychotherapeutic strategies, psycho-educational strategies, and spiritual support that target symptoms.

Whether students access such services, participate in an intervention when it is offered, and improve their level of distress after the intervention is yet unknown. The next step is to test the intervention and collect further data. Predictors and confounders, clarification of active ingredients and the mechanisms of change need to be determined in order to reproduce the intervention effectively. The response from the participants, student health center staff, and the universities involved provide a hopeful prospect for a trial exploration of the intervention.

CHAPTER FIVE

CONTRIBUTIONS, ETHICS, FUTURE RESEARCH AND PRACTICE

The series of studies included in this thesis proposed a preliminary model for a manual based intervention to reduce psychological distress after abortion for university students. The model can be used in the next phase of intervention development which includes pilot testing the intervention on a sample of university students. The study sites that participated in this study expressed an interest in piloting the intervention in the short term, and delivering such services in the long term.

Contributions to Nursing Practice

Surprisingly, there has been little scientific inquiry into abortion within the field of nursing as compared to other health disciplines. The American Nurses Association (ANA), while acknowledging respect for the legal status of abortion, recognizes abortion as symptomatic of social failure (American Nurses Association 1989) and emphasized seeking solutions to underlying societal problems that created the need for abortion. This emphasis, while important, may have directed scholarly inquiry away from the phenomena of abortion itself. In spite of this, nursing remains one of the few health professions that recommended grief counseling after abortion (ANA, 1989).There are several key reasons why identification of abortion as a type of psychosocial stressor for some women is critical for recognition and knowledge development within the profession. First, and most important, if nursing is to maintain its social contract and accountability to the public, nursing knowledge needs to reflect evidence-based knowledge. Second, nursing has a tradition of patient advocacy particularly for marginalized populations, the homeless, nursing home residents, etc. Women report being shunned by health and mental health professional that either deny or minimize their experience of abortion. Third, if nursing is to maintain an expertise in

human responses, then the full range of human responses to abortion must be recognized, treated and investigated. Even if negative responses are minimal, nurses are accountable to be prepared to address these as well as other adverse events when presented clinically. Fourth, nursing upholds a bio-psychosocial perspective. While some aspects of health care, such as that of abortion, have sociopolitical implications, biological processes cannot be ignored or minimized. Bio-psychosocial responses to abortion are within the purview of holistic nursing practice. Finally, nursing knowledge development includes the knowledge from the patients' lived experience. According to the American Nurses Social Policy Statement (2000) nursing knowledge development must reflect patient subjective and objective points of view.

Ethics

Healthcare professionals have an ethical obligation to women who have abortions. The ethical principles that motivate this study include non-maleficence, justice, and beneficence. Non maleficence obliges healthcare professionals to avoid doing harm. Some women may be inadvertently harmed by the abortion or factors associated with the abortion. Therefore, healthcare professionals are obliged at a minimum to reduce the adverse effects of abortion for some women or at best prevent them. It is increasingly evident that the population of women who become distressed as the result of abortion is larger than known or expected. Therefore, healthcare professionals are obliged to be knowledgeable of risks, screening, prevention, and treatment of the range of negative responses to abortion.

The principle of justice mandates certain obligations on the part of healthcare professionals based on the rights and claims on of patients. Women seeking and obtaining abortions have the right to adequate information concerning risks and benefits, as well as safe, and comprehensive care. This is noteworthy as some who provide abortions may have a financial stake in minimizing the risks of abortion. Furthermore, justice implies access to care. Women have a claim to access care after abortion that is equal to access care before abortion.

Finally, the ethical principle of beneficence promotes the doing of good. Unfortunately, the political climate of abortion keeps the focus on abortion. The focus needs to shift to what is in the best interests for the women who have them.

The ethical principles salient to the methods of the study include confidentiality, disclosure of information, and obligation to treat. See Appendix B. Consent Forms for the descriptive study. Because of the nature of the study, confidentiality was strictly enforced. Participants who had abortions and who did not meet study eligibility or who requested services were referred to other providers for follow up care.

Implications for Future Research and Practice

In addition to the ethical obligations arising from this new data, healthcare providers have a professional obligation to treat women who are distressed from abortion. In keeping with the promotion of patient safety, a public health approach to psychological risks of abortion would prioritize vulnerable populations according to patient safety. Strategies would include intervention strategies, prevention strategies, and education strategies. Interventions strategies such as effectiveness studies to promote relief of post abortion distress across populations need to be research priorities.

Next, prevention strategies would identify, screen, and monitor populations at high risk for developing post abortion distress. Moreover, informed consent protocol would reflect these new risks.

Finally a public health agenda would include education strategies. Health education initiatives within school-based health education programs would identify risks associated with all reproductive decision-making including abortion before pregnancy occurs or before students become sexually active. Education would also include increasing professional awareness of post abortion responses through knowledge transfer efforts such as continuing education, university courses, etc.

Limitations and Bias

There are several limitations to this study. The first limitation is sources of bias. Because the population is self-selected, the severity of post abortion distress may be overestimated or underestimated causing selection bias. Only participants who were either healthy enough or distressed enough presented for the study. A second source of bias is the influence of social desirability upon results, particularly within a college-aged population. Social desirability caused by peer norms within a group format may have influenced responses to intervention and inflate or deflate results. In addition, the effects of testing may over influence results, as well. Social desirability may also contribute to non-disclosure of exact numbers of previous abortions resulting in misclassification bias. A third source of bias is response bias. Participants who sought treatment may be different from those who do not participate in the intervention.

Several limitations exist with the proposed intervention. The intervention is limited to reflect recommendations from a majority of distressed participants. As such, they may not represent a minority who may participate in another type of intervention. Moreover, this type of intervention is specific for those who desire and are capable of addressing the abortion experience. Other types of intervention may be more appropriate for some women who report post abortion distress, such as an indirect approach that does not focus on the abortion but on other areas of women's lives or an individual rather than group format.

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APPENDIX A

Information to Accompany

Manuscript Two

The Pre-Clinical Phase Descriptive Study

1. DEMOGRAPHIC QUESTIONNAIRE

1. **Subject Number** _____**ID #**:_____

2. **Name of School or University** _____

3. **Declared Major**_____ **Age**:_____ **Birth date:** _____

4**.Citizenship**_____Race:_____ Ethnicity_____

5. **Religious Affiliation**: (Circle one) Yes No Type_____

Do you attend regularly? Regularly ☐ Occasionally ☐ Rarely ☐ Never ☐

6. **Occupation Classification**:

Student: ☐ part-time ☐ full-time

Occupation: ☐ part-time ☐ full-time

7. **Education:** High school_____ CJEP _____Years of College: Circle 1 2 3 4

Masters: _____PhD: _____Approximate Grade Point Average _____

8. **Living Arrangements**

Student Housing _____ With Friend_____ With Boyfriend_____ With Parents ____

9. Parental Education:

Education	High School	Technical School	College	Masters	MD/PhD/Prof.
Mother					
Father					

10. Parental Status

Married & Living together____ Divorced____ Separated ____ Never Married____

II. GENERAL HEALTH QUESTIONNAIRE

I. General Health

1. Height _____ Weight_____
2. Current Medical Problems:
   - _____ Date first began
   - _____ Date first began
   - _____ Date first began

3. Current Medication and Dosage
   - _____
   - _____
   - _____

4. Do you smoke? (Circle one) YES NO Number packs per day _____
   Number years smoking _____

5. Number of alcoholic beverages per week: (Circle one) None 3-7 7-14 > 15

6. Recreational Drug Use? (Circle one) YES NO
   Freuency/Week
   Type _____

7. Contraception Use (Circle one) YES NO SOMETIMES
   If Yes, what type _____

8. Have you used emergency contraception? YES NO

If so number of times_____

II. Mental Health

Are you being treated for any mental health problems**?** (Circle one) **YES NO**
If YES, please list:

1. _____Date first began_____

2. _____Date first began_____

Have you ever received in-patient, out-patient, group or family therapy for a mental health problem? (Circle one) YES NO

Nature of Problem Type of Treatment Year

Have you ever felt suicidal? (Circle One) YES NO If yes, please explain when and nature of circumstance**:**

_____

_____

_____

_____

Have you ever attempted suicide? (Circle One) YES NO

If Yes, when?_____

What were the circumstances? _____

II. REPRODUCTIVE HISTORY QUESTIONNAIRE

1. Reproductive History

The following questions concern your *recent pregnancy and abortion*

Approximate length of pregnancy in weeks: 4 weeks___ 8 weeks___ 12 weeks_____

> 13 weeks___

a. Date of abortion _____

b. Location of abortion:

Hospital_____

General Clinic_____

Abortion Clinic, ie Morganteliere, Planned Parenthood,.)

_____

e. Abortion Type : Surgical_____ Medical (use of pill to induce abortion)_____

Saline Injection_____ Other type_____

d. Did you receive anesthesia? (Circle) YES NO.

If Yes, what type?:

Local _____ General _____

e. Did you experience any medical or surgical complications after the abortion? i.e. infection, incomplete abortion, transfer/referral to acute care facility, excessive bleeding, perforation of cervix, severe pain, other) Please indicate nature of problem and location of referral if applicable:

_____

_____

f. Did you witness/or have contact with the embryo/fetus? (i.e. ultrasound/expulsion/-examination, etc.) Circle one: YES NO. If Yes, please describe your reaction:

_____

_____

_____

g. If you had a medical abortion, how many days were required to complete the procedure? _____

h. How many visits to the abortion provider were required to complete the abortion?

_____

2. Did you have any contact with the University Student Health Services concerning the abortion? (include phone calls, visits for pregnancy test, contact for abortion referral, post abortion follow up) (Circle one) YES NO

   Please indicate any services used. Were the services helpful? Please indicate why or why not.

   _____

   _____

   Did you use other services in community or elsewhere? If yes. Please name and services used.

   _____

   _____

   I received pre-abortion counseling. ☐ Yes ☐ No

   Location_____

   I received post-abortion counseling. Yes No

   Location_____

3. I have contacted/consulted the following post abortion resources:

   a. *Informational* resources on-line. If so, name_____

   b. *Emotional Support* resources on-line (ie. post-abortion websites, chat rooms, etc.) Name_____

   c. *Support/Self-help Groups* _____ If so, please list: _____

   _____

   d. Post abortion *literature* (i.e, books, personal stories, etc) If so, please list.

   _____

4. Since the abortion, I have consulted a mental health professional. Yes ☐ No ☐

   Reason: _____

   _____

   Number of visits_____

5. Since the abortion, I have experienced thoughts of suicide. Yes ☐ No ☐

Reason

Number of times_____

6. I have informed one of my parents of my abortion. Yes _____ No_____. If no, why or why not?

_____

_____

_____

7. Prior to the pregnancy, I consumed about _____ alcoholic beverages per week.

Since the abortion, I consume about _____ alcoholic beverages per week.

8. Prior to the pregnancy, I smoked about _____ packs of cigarettes per week.

Since the abortion, I smoke about _____ packs of cigarettes per week.

9. Prior to the pregnancy, my drug use has been about _____ times per month.

Since the abortion, my drug use has been about _____ times per month.

2. Abortion Satisfaction

1. To what extent are you satisfied that you received adequate *emotional support* during the abortion decision-making? (Place a mark on the line below.)

Unsatisfied _____ Satisfied

2. To what extent do you feel satisfied that you received adequate *informational support* during your abortion decision-making? (i.e; explanation of medical risks, psychological risks, preparation for procedure, emotional effects, expectations)

Unsatisfied _____ Satisfied

3. At the time of the abortion, how sure were you about the decision?

0%_____ 100%
Unsure Sure

4. To what extent do you feel the abortion was a positive experience to cope with a difficult event in your life?

Negative _____Positive

5. To what extent are you presently satisfied with your abortion decision? (Place a mark on the line below):

Unsatisfied_____ Satisfied

6. To what extent did you feel pressured by others to abort? (Place a mark on the line below):

No Pressure_____Pressure

7. To what extent do you regret the abortion? (Place a mark on the line below)

No Regret _____ Regret

8. If you experienced another unintended pregnancy, would you have another abortion? Yes_____ No _____ Not Sure _____

9. The *most helpful person* during my abortion experience has been _____

10. The *least helpful person* during my abortion experience has been _____ _____

11. The *one thing that has helped me the most to cope* with the abortion is: _____

_____

12. To what extent are you satisfied with the amount of *post- abortion partner support* that you received? (Place a mark on the line below:)

Unsatisfied_____ Satisfied

13. To what extent are you satisfied with the amount of *post- abortion friend support* that you received? (Place a mark on the line below:)

Unsatisfied _____ Satisfied

14. To what extent are you satisfied with the amount of *post abortion parental support* that you received? (Place a mark on the line below:)

Unsatisfied _____Satisfied

Consent Form

Title of Study "Post Abortion Psychological Distress and Intervention Among University Students"

Investigator Maureen Curley, MS, APRN, BC PhD (candidate)
School of Nursing, McGill University

Introduction

Approximately 10-20% of women experience significant psychological distress after abortion. This can include depression, anxiety, or guilt that does not diminish over time.

This study is a psychological research project that proceeds in two phases. Phase I aims to increase information about psychological distress after abortion for university students.

Purpose

This study aims to describe post abortion psychological distress among university students. The goal is to collect, analyze, and compare psychological outcome among university students who experience an abortion(s) with university students who have not experienced an abortion.

Procedure

The study includes completing psychological instruments and questionnaires concerning present psychological health. Some questions will address sensitive issues regarding reproductive and sexual history. The approximate time will be two hours.

Location:

The study will take place at McGill University or at the University of Vermont,

Confidentiality:

All information that the participant provides will remain strictly confidential. A code number will identify responses to questionnaires, computerized tests, and instruments. Only the Principal Investigator will have access to the code number. There may some exceptions to the agreement of confidentiality when the principal investigator may be required to take action. Such exceptions include when a participant's health, life, or safety is threatened with thoughts of hopelessness, suicide or violence. In such cases, the participant will report any adverse events to the Principal Investigator.

Compensation

Upon completion of documentation, the participant will be compensated in appreciation for time invested in the study.

Benefits
There are no benefits for participants who are completing this study.

Risks
There are potential risks for participation in this study. Some instruments may trigger uncomfortable thoughts/feelings associated with stressful events. These risks may include depression, anxiety, sadness, or guilt as well as frequent thoughts associated with the stressful event. These responses to a stressful event are to be expected. If the participant experiences stronger symptoms than are expected, the participant agrees to inform the Principal Investigator immediately @ Maureen.curley@mail.mcgill.ca.

Withdrawals
If a participant experiences more risks than are expected, the participant may be withdrawn from the study. If early withdrawal from the study occurs, the participant will be compensated proportionate to the time invested in the study.

Subject Rights
Participation in this study is voluntary. The participant has the right to ask questions at any time, to refuse to participate, or to discontinue participation at any time. If questions arise regarding participant rights, the participant may contact the patient representative of the study site: **Ms. _____**
(*Representative name and phone number at each study site*.)

Subject
I, the undersigned _____, have read this consent form. The study has been explained to me. My questions have been answered to my satisfaction. My signature below confirms my agreement to participate in this study.

Signature: _____ Date: _____

Principal Investigator:
I have explained the study protocol, confidentiality, risks, and benefits to the participant.

Signature: _____Date: _____

McGill University

AFTER
ABORTION STUDY

ARE YOU A STUDENT WHO HAS HAD A RECENT or PAST ABORTION?

WE INVITE YOUR INPUT.

THIS STUDY AIMS TO IMPROVE SUPPORT SERVICES TO STUDENTS AFTER ABORTION

IN COOPERATION WITH
THE McGILL STUDENT HEALTH SERVICES.

SEEK PARTICIPANTS WHO ARE WILLING TO COMPLETE QUESTIONNAIRES REGARDING EMOTIONAL EXPERIENCE OF ABORTION

CONTACT

maureen.curley@mail.mcgill.ca

APPROXIMATE TIME IS 1 HOUR

$15.00 Stipend is Offered

ALL INQUIRIES STRICTLY CONFIDENTIAL

McGill University

AFTER
ABORTION STUDY

ARE YOU A STUDENT WHO HAS HAD A RECENT or PAST ABORTION?

WE INVITE YOUR INPUT.

THIS STUDY AIMS TO OPTIMIZE SUPPORT SERVICES FOR STUDENTS AFTER ABORTION

IN COOPERATION WITH THE
University of Vermont Center for Health and Well Being

SEEK PARTICIPANTS WHO ARE WILLING TO COMPLETE QUESTIONNAIRES REGARDING EMOTIONAL EXPERIENCE OF ABORTION

CONTACT
Maureen.curley@uvm.edu

APPROXIMATE TIME IS 1 HOUR

$15.00 Stipend is Offered

ALL INQUIRIES STRICTLY CONFIDENTIAL

McGill University

AFTER
ABORTION STUDY

ARE YOU A STUDENT WHO HAS HAD A RECENT or PAST ABORTION?

WE INVITE YOUR INPUT.

THIS STUDY AIMS TO OPTIMIZE SUPPORT SERVICES FOR STUDENTS AFTER ABORTION

IN COOPERATION WITH
CONCORDIA UNIVERSITY STUDENT HEALTH SERVICES

SEEK PARTICIPANTS WHO ARE WILLING TO COMPLETE QUESTIONNAIRES REGARDING EMOTIONAL EXPERIENCE OF ABORTION

CONTACT
Maureen.curley@mail.mcgill.ca

APPROXIMATE TIME IS 1 HOUR

$15.00 Stipend is Offered

ALL INQUIRIES STRICTLY CONFIDENTIAL

APPENDIX B.

Information to Accompany

Manuscript Three

The Modeling Phase of Intervention Development

POST ABORTION PSYCHOLOGICAL INTERVENTION QUESTIONNAIRE

In an attempt to be more responsive to student needs, the Student University Health Service is interested in identifying a weekend schedule of post-abortion group support that students would prefer.

1. What is your preference for the type of weekend format for that would work best during the school year?

   ☐ Friday evening to Sunday afternoon

   ☐ Saturday morning to Sunday afternoon

   Other. Please describe

   _____

2. After your abortion experience, when would these kinds of services have been most helpful to you?

   ☐ Immediately after abortion

   ☐ Within 4-8 weeks

   ☐ Within 3-6 months

   ☐ Six months to a year

   ☐ After a year

3. Are there other kinds of services or approaches that the university health services could offer to address any need for support associated with the abortion?

   If so, please describe below

   _____

   _____

   _____

3. The following topics are suggested areas for post abortion psychological support. Please indicate all areas that may be of interest to you by marking an X.

- Assist with grief and loss issues associated with abortion _____
- Assist with improving coping skills after abortion _____
- Assist with addressing guilt associated with abortion _____
- Assist with addressing spiritual issues associated with abortion _____
- Assist with pregnancy prevention issues _____
- Education related to post abortion psychological stress/symptoms _____
- Share experience with others who choose to focus on abortion_____

Figure III- 2. Factor Analysis

Figure III-2 A Communalities

Communalities

	Initial	Extraction
Prefer Assist w/ Grief	1.000	.740
Prefer Assist w/ Coping	1.000	.631
Prefer Assist w/ Guilt	1.000	.754
Prefer Assist w/ Spiritual Issues	1.000	.836
Prefer Assist w/ Pregnancy Prevention	1.000	.813
Prefer Assist w/ Distress Education	1.000	.700
Prefer to Share Abortion Experience	1.000	.507

Figure 2. B

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.598	22.828	22.828	1.598	22.828	22.828	1.354	19.342	19.342
2	1.213	17.331	40.159	1.213	17.331	40.159	1.294	18.493	37.835
3	1.141	16.297	56.455	1.141	16.297	56.455	1.194	17.060	54.894
4	1.030	14.709	71.164	1.030	14.709	71.164	1.139	16.270	71.164
5	.885	12.641	83.806						

Figure III-2 C. Scree Plot

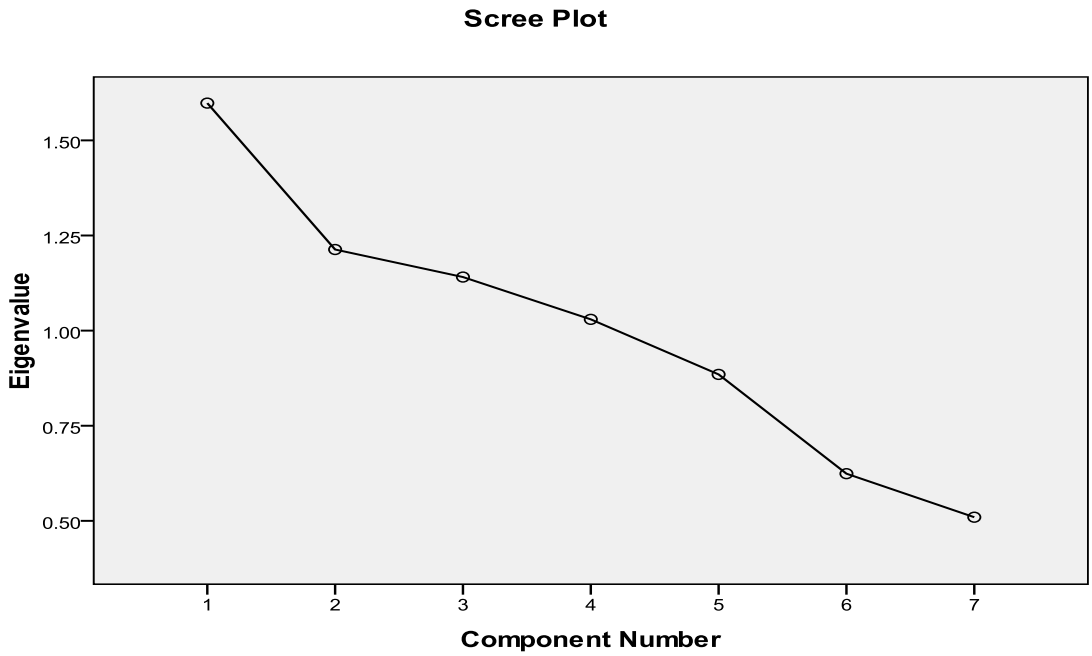


Figure III-2 D.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Prefer Assist w/ Grief	-.062	-.708	.190	.447
Prefer Assist w/ Coping	.127	-.036	.783	-.028
Prefer Assist w/ Guilt	.844	-.161	-.070	-.099
Prefer Assist w/ Spiritual Issues	.099	.015	-.029	.909
Prefer Assist w/ Pregnancy Prevention	-.110	.869	.072	.199
Prefer Assist w/ Distress Education	.773	.101	.175	.249
Prefer to Share Abortion Experience	.044	.005	-.710	-.036

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations

APPENDIX C.

The Post Abortion Treatment and Healing Intervention

Manual

The Post Abortion Treatment and Healing Intervention

Purpose

The Post Abortion Treatment and Healing intervention aims to provide a model for the preliminary phase of a manual based and phase-oriented approach to the treatment of psychological distress after abortion. The preliminary phase of treatment for psychological stress and trauma disorders focuses on symptom stabilization, affect regulation, and distress tolerance. Specifically, the proposed intervention aims to prevent, reduce, or relieve psychological distress associated with target symptoms that may have resulted or coincided with an unwanted pregnancy and abortion for a sample of university study subjects who desire such services.

Introduction

The intervention is composed of seven modules using psychological, educational, and behavioral strategies that target specific symptom domains. These modules are as follows: (1) an introductory module to welcome and explain the purpose of the intervention, (2) a psycho-education module to provide information about post abortion psychological distress (3) a coping module to build skills (4) a psychotherapeutic module to process the stressful event (5) a guilt and forgiveness module in order to reduce guilt (6) a pregnancy prevention module (7) a spiritual module to promote resolution of pregnancy and abortion experience and hope for future. A grief module is provided for use as needed. The delivery of the intervention is oriented toward mental health providers and nurses who have the skills to evaluate, monitor, and manage mental health symptom stabilization as required.

The Theoretical Basis of the Intervention

The theory, empirical evidence, and patient preferences collectively formed the basis to develop the intervention. The theoretical frameworks that underlie the intervention include stress response theory, particularly a phase-oriented approach to treating psychological stress and trauma disorders, elements of perinatal loss theory, post abortion psychological distress theory, and nursing taxonomies and interventions, including practice guidelines for advanced practice psychiatric nursing.

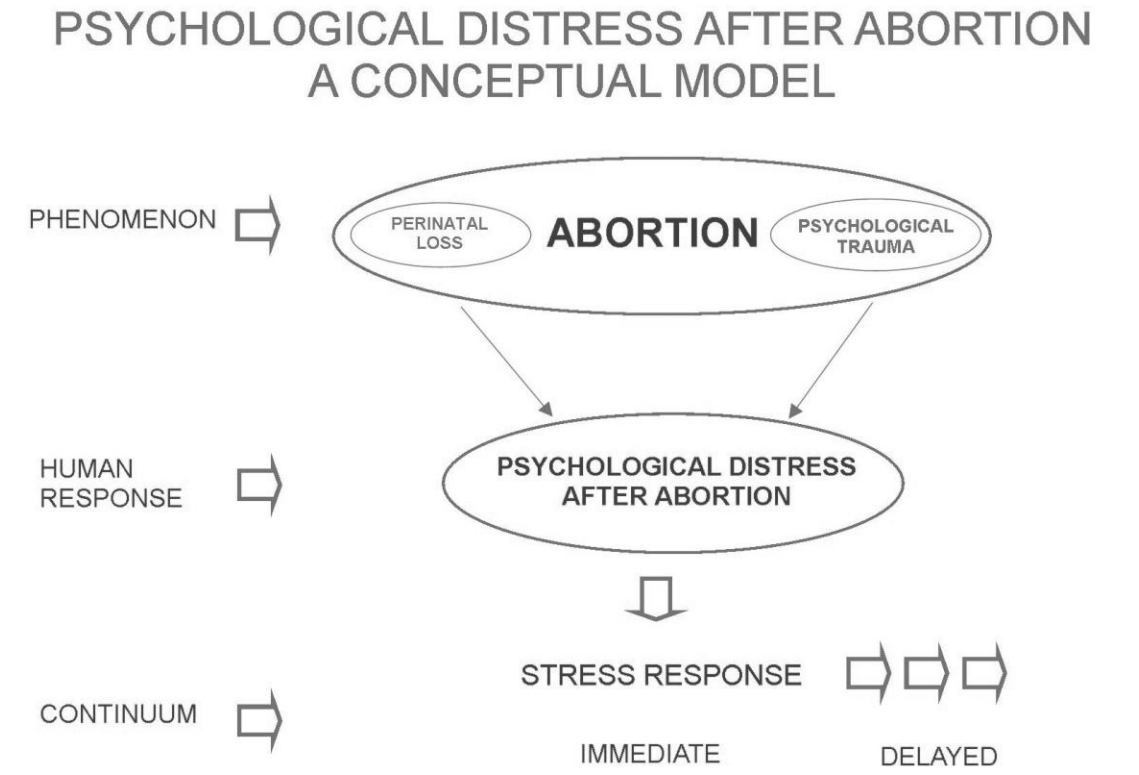
The empirical evidence that supports the intervention is derived from a systematic review of the literature, evidence-based treatment of psychological stress and trauma, and data collected from a sample of university subjects who have experienced psychological distress as a result of abortion and want treatment to relieve it.

Patient preferences from the sample of university subjects also guide the feasibility and acceptability of delivering the intervention. Subjects identified the structure, format, timing and content of the intervention based on what they desired. The intervention synthesizes these domains.

Table III-6 ***Phases of Psychological Distress After Abortion adapted from Stress Response Syndromes***

Phase of Stress Response		Pathological Stress	Post Abortion Stress
Event	#1 Confirmation of pregnancy #2 Abortion Procedure		
Outcry	Intense or prolonged	Panic, exhaustion	Panic, confusion, Emotional numbing Decides to Abort
Denial	Intense or prolonged	Pathological avoidance Depression, drugs, suicide	Pathological avoidance Depression, drugs, suicide
Intrusion	Intense or prolonged	Post- Traumatic Stress Reactions	Post Traumatic Stress Reaction
Working Through	Blocked	Maladaptive Coping	Maladaptive Coping
Completion	Not Reached	Personality Constriction	Impaired Function

Conceptual Model for Understanding Psychological Distress After Abortion



The Philosophy of the Post Abortion Treatment and Healing Intervention

The intervention evolves from a bio-psychosocial approach to post abortion psychological distress. Whereas abortion is dominated by a political as opposed to a health framework, the existing politics of abortion excludes women who choose abortion and subsequently experience distress afterward. This is particularly evident in the continuing controversy surrounding the etiology, incidence, and severity of psychological distress after abortion. While some researchers attribute distress to the abortion, others attribute distress to the unwanted pregnancy, and still others attribute distress to circumstances surrounding both, or to circumstances before the pregnancy. Thus, conclusions to the etiology of psychological distress after abortion are unclear, largely due to methodological limitations in studying women after abortion. As a result, health care providers have been slow to recognize psychological distress after abortion, leaving a gap in services.

In an effort to meet this gap, self-help groups developed by women that have experienced distress from abortion themselves, faith-based organizations that reach out to women in need, and pro-life websites have been among the few resources that recognize and serve women after abortion.

In contrast to these, the current intervention views post abortion psychological distress from a health, as opposed to a political, religious, or moral perspective. A bio-psychosocial framework is the dominant paradigm for contemporary healthcare worldwide, and is consistent with most nursing, and healthcare phenomena. A bio-psychosocial framework includes viewing psychological responses to abortion ranging from absent, mild, moderate, to severe distress after abortion. Holding this view, the intervention assumes a politically neutral position to abortion in order to allow women to experience the full range of expressing positive and negative feelings of their abortion experience. This includes women who may be distressed yet still relieved to have had the abortion, women who may regret the abortion, and women who are dissatisfied with their abortion experience. Motivated by the ethical principle of

beneficence, the intervention aims to fill an unmet need within healthcare to an underserved and marginalized population of women.

The intervention maintains that each woman and her circumstances are unique, as is her experience of an unwanted pregnancy and abortion The intervention follows the premise that women who experience psychological distress after abortion are entitled to adequate healthcare services to treat the distress. Based on the ethical principle of justice, this entitlement obliges healthcare providers of their professional responsibility to identify and treat women who experience distress after abortion. The intervention is the first of a kind within healthcare for women after abortion.

The Organization of the Post Abortion Treatment and Healing Intervention

The intervention framework is organized around structure, processes, and content. The structure follows a supportive group therapy format for early or preliminary intervention of stress and trauma disorders. The group therapy format is suggested for feasibility of delivery and the benefit of group therapy. Group therapy offers enhanced therapeutic factors of universality, identification, and support. Alternatively, the organization into modules allows the intervention to be delivered on an individual basis as well.

The process of the intervention follows the stages of treatment of stress responses proposed by Horowitz (2000), guidelines for preliminary treatment of stress and trauma disorders from the National Center for PTSD, and evidence-based phase-oriented treatment of psychological trauma.

The content of the intervention includes themes identified by patients themselves for the treatment of post abortion distress. In addition,, standard nursing interventions support these content areas.

The Structure of the Post Abortion Treatment and Healing Intervention

The intervention is structured for multiple purposes. First, the intervention provides a preliminary phase of treatment. Phase oriented treatment regimes build skill and promote distress tolerance during the first phase, before progressing to the disclosure and emotional process of traumatic content in later phases. Treatment recommendations from the National Center for PTSD recommend preliminary trauma interventions focus on targeting symptoms, promoting positive coping, providing measures to soothe, comfort, support, and improve functioning (Litz and Maguen 2007).

In addition, the intervention provides a group therapy modality. Factors that are intrinsic to group therapeutics such as member cohesion, validation, (Johnson & Lubin 2000) and the promotion of hope (Yalom 1995) are particularly relevant to post abortion distress which is often exacerbated by secrecy and isolation. Since the intervention is an initial treatment, a supportive approach to group therapy is used. The intervention is structured according to empirically based guidelines for supportive group therapy based on the Interdisciplinary Society for Traumatic Stress Studies Practice Guidelines (Foy et al 2000).

Supportive group therapy using trauma focused guidelines aim to provide structure, facilitate mild arousal, focus on current coping, minimize transference, offer psycho-educational material, and promote interpersonal support (Foy et al p.157, 2000). Supportive group therapy has been an effective modality for the treatment of stress and trauma symptoms particularly for female populations with demonstrated reduction in pre- and post test scores of distress, anxiety (Cryer & Beutler 1980), depression, self-esteem (Richter et al 1997), and improvement in coping (Tutty et al 1993). Further, a supportive group intervention parallels the first of the three-stage model of trauma-focused group treatment as proposed by Herman (1992). According to Herman, Stage I treatment focuses on self-care, minimizing symptoms, and social support. Similarly, others emphasize psycho-education, cognitive re-framing (Stein & Eisen 1996), and improvement of coping (Foy et al 2001) as distinguishing features of supportive group therapy. In contrast, Stage II treatment includes in-depth exploration of the trauma, and Stage III treatment focuses on interpersonal relationships.

Second, based on patient preferences for timing of a service to be scheduled as a full or partial weekend offering, the regime can be delivered in modules. A module can be offered either over the course of a weekend, on a half weekend, or weekly schedule. Each module aims to reduce symptoms of a stress related factor. The modules are developed according to the content areas identified by distressed subjects. Interventions are derived from Horowitz treatment for Stress Response Syndromes (2000), supportive nursing interventions from the Nursing Intervention Classification (McCloskey 2004;

NANDA 2000; ICN 2000), and consensus from case reports of abortion treatment. The weekend intervention is selected to accommodate a college age population by minimizing the risk of attrition that may occur with weekly group meetings. The weekend schedule is borrowed from a post abortion support group model that has gained worldwide popularity totaling more than 30,000 participants (Burke 2003).

Finally, the intervention focuses on a young adult population, from ages eighteen to mid-thirties. The intervention incorporates age appropriate strategies for adolescents and young adults. To date, the preferred treatment guidelines for adolescents support a trauma-focused intervention that combines limited disclosing of the event, stress management, and cognitive-behavioral re-structuring within an out-patient setting. In addition, parental involvement is suggested as appropriate (Cohen et al 2000). Several studies evaluated the impact of a group trauma focused intervention for an adolescent population. March and colleagues (1998) studied the effects of a cognitive behavioral group intervention for adolescents after a single incident stressor. Using the Clinician Administered PTSD Scale, they found a decrease in pre- vs. post treatment of depressive, anger, and behavioral symptoms. Likewise, Goenjian and colleagues (1997) found resolution of grief symptoms in n= 64 adolescents following a school based cognitive-behavioral intervention to reduce grief /trauma symptoms.

The Process of the Post Abortion Treatment and Healing Intervention

Psycho-educational strategies, psychotherapeutic strategies, skill building strategies, and strategies to reduce spiritual distress provide the therapeutic processes of the intervention. The intervention is delivered in modules and includes the following: (1) an overall goal or aim for the module (2) specific objectives to be met by the patient (3) strategies to be implemented by the provider in order to achieve the goals, and (4) behavioral tasks to be completed by the patient

Next, given the highly sensitive nature of the content, the intervention follows a dose-by-dose approach as suggested by Horowitz (2003). This approach aims to strike a balance between providing a safe place for narration of the unwanted pregnancy and abortion experience, which for many doesn't exist, and respecting the protective defenses of each member. Guided by the mandate of doing no harm, the intervention distinguishes itself from other group interventions as the subject rather than the group format guides intervention objectives. For example, young adult women differ from older adult women in their developmental abilities to cope, to separate own needs from those of others, and regulate emotions. As such, some may not be able to emotionally process the grief associated with loss of fetus, but instead may need to process their own needs. Within this in mind, at the outset, the subject herself determines what aspect of the pregnancy or abortion experience is most distressing (phenomena), identifies problematic cognitive and affective symptoms (states), describes unhealthy patterns of avoidance (defenses) or coping, particularly self-destructive behaviors, and chooses her own goals for the intervention.

The Content of the Post Abortion Treatment and Healing Intervention

The content of the intervention includes content areas that are based on patient preferences. Content areas are also shaped according to six nursing phenomena of concern (ICN 2002) associated with post abortion distress. These phenomena include knowledge deficit of post abortion stress, ineffective coping, grief, guilt, risk for post-trauma response and spiritual distress. Hence, targeting these phenomena using a supportive approach, the intervention includes seven modules. The modules assume a spiraling rather than linear healing trajectory where phenomena are progressively revisited until resolved. See Figure III-4. The Post Abortion Treatment and Healing Intervention Modules. The modules are described below.

(1) INTRODUCTION MODULE
To introduce and target key themes of distress (*Realization*)

(2) PSYCHEDUCATION of POST ABORTION PSYCHOLOGICAL DISTRESS
To provide psycho-education of psychological stress after abortion (*Recognition)*

(3) SKILLS BUILDING and COPING MODULE
To build skills, identify maladaptive behaviors, provide group support and promote an environment of unconditional positive regard *(Resilience)*

(4) PSYCHOTHERAPEUTIC PROCESSING of a STRESSFUL EVENT MODULE
To narrate initial themes of stressful event (*Remember*)

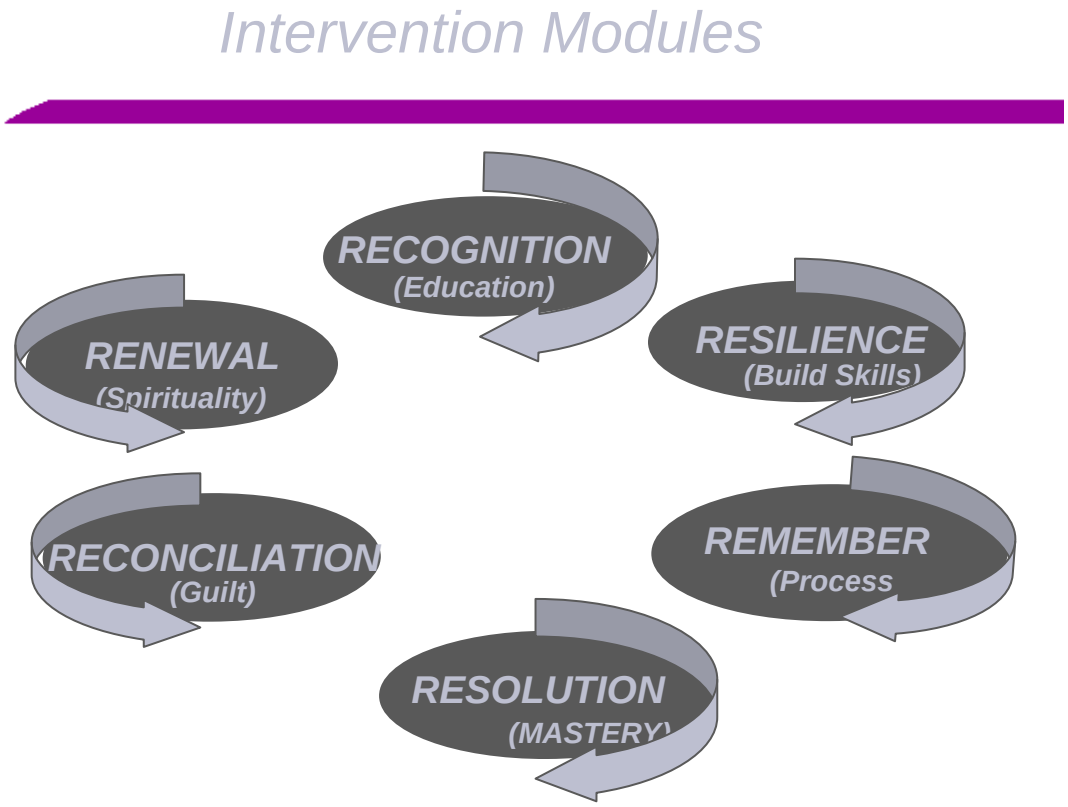
(5) PSYCHOTHERAPEUTIC GUILT and FORGIVENESS MODULE
To begin to address guilt and facilitate forgiveness *(Reconciliation)*

(6) PSYCHOTHERAPEUTIC REPRODUCTIVE MASTERY MODULE
To promote behaviors which prevent future unwanted pregnancies/ abortion (*Resolve)*

() PSYCHOTHERAPEUTIC GRIEF and LOSS MODULE
To facilitate mourning and resolve losses
(This module is optional and may not be preferred)

(7) SPIRITUALITY MODULE
To cognitively re-frame and accept the pregnancy/abortion experience, instill hope, and find meaning *(Renewal)*

Figure III- 3. The PATH Intervention Modules



POST ABORTION TREATMENT and HEALING

INTERVENTION PROCEDURE

I. Introduction Module

Goal: To build trust, respect, and emotional safety among participants

Rationale: The provider creates an atmosphere where participants feel increasingly comfortable to discuss, disclose and discharge sensitive content about their pregnancy and abortion experience.

Objective 1: Participants will adhere to procedure, rules, and expectations

Objective 2: Participants will introduce themselves to each other

Objective 3: Participants will increase sense of trust and emotional safety

Introductory Strategies for Providers:

1A. Provide warm, optimistic, caring welcome and introduction of program

1B. Attune to any high anxiety, strong emotions, isolation, increased distress

1C. Provide for individual consultation with participants as needed.

1D. Employ measures to maximize safety, minimize risk

a. Check in with participants at beginning of each module

b. Use scale from 1-10 to help participants self monitor emotional states

Task for Participants

Task 1. Adhere to rules, procedure, and expectation of program

Task 2. Introduce self to providers and to group

Task 3. Begin to self monitor emotional states

Method

(Providers and participants are seated in a semi-circle. Environment is casual. Make water, coffee, tea available. Boxes of tissue are sporadically placed around the circle. Black/white board available in front of room. Room and environment is private, quiet, sound is protected. Seating is comfortable. Lighting is soft. Allow plenty of time for participants to ask questions, clarify expectation, rules, express concerns, and introduce selves.)

1. **Welcome**

1.A. Introduce

1.A.1. Providers

1.A.2. Describe purpose, origins, early phase the intervention

1.A.3. Layout of facility, bathrooms, doors, schedule for weekend, break times, etc. Rules for use of cell phones, Ipods, text messaging, etc.

1.A.4. Ask if any other immediate concerns?

1.B. Emphasize participation is important. Feedback welcomed and used to improve delivery

1.C. It is a privilege to accompany them in their healing

1.D. Thank them for their:

1.D.1. Trust in the providers

1.D.2. Willingness to engage a new and innovative program

1.D.3. Congratulate them on their courage, self care, confidence

1.D.4. Many women do not acknowledge the need, wait years, suffer alone

1.E. Inform that this is an initial intervention
Ensure confidentiality (Participants will have signed a confidentiality statement prior to intervention)

1.F. Emphasize pre-test, post test, as part of program completion

1.G. Inform them that their feedback will shape intervention for replication

1.H. Providers will regularly check on participant emotional, behavioral, cognitive status to monitor safety, symptom stability

1.I. Encourage participants to inform providers of worsening of symptoms. Encourage participants to identify own goals for intervention

1.J. State expectation is to complete the intervention

1.K. Describe that healing may be temporarily painful. This signals that the process is working. Use healing metaphors such as:

- going to the dentist,
- lancing a boil, etc..

1.1 **Review goals, schedule, and expectations for participants**

1.1.1 Short term goals include:
1.1.2 Provide safety, social support and education of post abortion distress
1.1.3 Reduce psychological distress after abortion
Improve level of functioning

Long Term goal includes:
1.1.4 Prevent repeat unintended pregnancy
1.1.5 Prevent repeat abortion
1.1.6 Inform of group processes,
Assign buddies, in order to check on each other
Participants will be encouraged to join activities
If activity is too distressing, inform provider

Describe model as introductory intervention aimed at addressing most distressing aspect of post-abortion distress. Not expected to cure distress all at once or over weekend. Resources for follow up assistance afterward for will be available for those that request it.

1.2 Encourage participants to go around the circle, share as much as comfortable about why they are here for about 1-3 minutes

- Introduce selves
- Explain reason for attending and what hope to take from intervention
- Express any fears, concerns, that they may have

Instruct participants to take a break

II. Psycho-education Module for Post Abortion Psychological Distress

Goal: To increase understanding and acceptance of post abortion distress

Rationale: Increased awareness, identification, and understanding of post abortion distress can enhance self-acceptance. Current social environment is not conducive to accept or validate distress after abortion. Invalidation increases sense of shame, secrecy, and isolation. This contributes to increased distress, avoidance, and pathological behavior after abortion.

Objective 1: Participants will recognize post abortion distress as response to a stressful event

Objective 2: Participants will identify own symptoms of post abortion distress

Objective 3: Participants will reduce anxiety by normalizing symptoms of post abortion distress

Psych-educational Strategies for Providers:

2A. Provide education for symptoms of psychological stress responses

2B. List and describe symptoms of post abortion distress. Identify target symptoms for intervention

2C. Identify risk factors for post abortion distress

2D. Provide non-threatening environment for increased understanding, awareness, and insight of post abortion distress. Encourage participant discussion, exploration

2E. Assess, track, and monitor observation and self report of participant symptoms of post abortion distress.

2F. Follow up participants who report moderate to severe symptoms of distress, worsening of symptoms, or who exhibit silence, non-participation, disengagement in group, or other concerns

2G**.** Encourage participants to **i**dentify target symptoms to work on during intervention

Psych-educational Tasks for Participants

Task 2.1. Participants will identify mastery of an earlier stressful life event

Task 2.2 Participants will identify their own symptoms, risk factors for post abortion distress

Task 2.3. Participants will target and quantify most acute symptom of post abortion distress that they wish to address NOW. Rate severity of symptoms 1-10 (least to most severe)

2A. Provide education for symptoms of stress responses

2.0 Define stress response symptoms as recognized behaviors consistent with aftermath of stressful events such as accident, death, abuse, violence, other pregnancy losses, etc. that some people experience. Encourage not to compare selves to others.

2.1 Inform stress responses are reactions to overwhelming events that cannot be processed at the time for a number of reasons. These reactions are often managed by defense mechanisms such as denial, emotional numbing, repression, suppression, and avoidant behaviors until the event can be addressed.

TASK 2.1. Encourage participants to reflect on another stressful event in their lives other than the abortion that they were able to master

- *What did they experience?*
- *How did they perceive the event?*
- *What emotions, thoughts, and behaviors did they have then?*
- *How did they cope? What worked, what didn't work?*
- *How long did it take to recover?*
- *What internal resources did they use?*
- *What external resources did they use?*
- *What was the most difficult aspect?*
- *What strengths did they use, what strengths did they learn?*
- *What positive thing came out of this for them?*
- *What aspects of their abortion experience are similar to this? What aspects are different?*

- *What did they expect then, what did they expect after the abortion experience?*
- *Where did the expectations come from? Themselves, others? Who?*

It is KEY to address the discrepancy between what they *expected* after the abortion and what they *experienced* after the abortion.

These differences need to be explored. Was the information based on their own thoughts? Did it come from someone else? Who? Where did they get the information? Describe the feelings that go with this gap.

2.2 Explain that stress responses can include intrusive or avoidant symptoms.

Intrusive symptoms include: frequent thoughts, images, dreams, nightmares, flashbacks and reliving of event. They can be thought of as the mind's way of pushing event to the forefront to address it. .

Avoidant symptoms include feeling numb, not remembering details of the event, secrecy, wanting to avoid persons, places, or reminders of the event,
and self destructive behaviors to forget ie ETOH abuse, cannabis use, recreational drug use. high risk sexual behavior, etc.

Sometimes, when the event is not emotionally addressed, it becomes behaviorally re-enacted and the events are repeated This can an unconscious way of gaining mastery of the event. This may be one reason for the high incidence of repeat unwanted pregnancies and repeat abortions for young women. This intervention aims to prevent these repetitive patterns.

Describe types of stress responses--acute, immediate, and delayed.

2B. List and describe symptoms of post abortion psychological distress

2.3 Many women do not address an abortion until months, years, or decades later. This can adversely affect health and well-being. Early interventions aim to improve well being after abortion. Post abortion distress can be triggered or worsened by break up with boyfriend/partner, significant loss or other life stressor death, divorce, another pregnancy, or abortion, etc.. Post abortion distress is also triggered by a maturing or therapeutic process that may decrease defenses and increase coping. .

Triggers are internal/external stimuli that evoke thought/feeling/behaviors related to pregnancy/abortion. The goal is to increase control over these triggers so as to not re-enact painful experiences.

2.3 Inform participants of **psychological symptoms** of post abortion distress.

Write these out on blackboard/whiteboard as examples including…

- prolonged guilt
- anger at those involved, directly or indirectly, with pregnancy or abortion
- angry outbursts, hostility
- sadness, grief, depression,
- pre-occupation with the pregnancy/abortion
- severe distress over non-significant deaths
- mood irritability
- frequent tearfulness about the abortion
- excessive and irrational fears, ie never getting pregnant, punishment
- feeling a sense of violation, victimization
- shame, self condemnation, self reproach
- anniversary reactions near expected due date/date of abortion
- ask group if they know other symptoms?

When emotions are not expressed in healthy ways, they can manifest as depression, anxiety, panic, powerlessness, hopelessness, and despair.

Inform participants of **behavioral symptoms** of post abortion distress

- Social isolation, withdrawal from friends, family
- Secrecy, not telling significant others about the abortion
- Sexual acting out with promiscuous, high risk sexual behavior
- Increased substance use
- Overeating, compulsive overeating, anorexic, bulimic behaviors
- Obsessive thinking about babies, desire to become pregnant soon
- Excessive need to talk about the pregnancy/abortion
- Engaging abortion political activism to the exclusion of other obligations
- Intense fear of becoming pregnant, excessive pregnancy testing
- High use of avoidant behaviors
    - drinking, drug use, high-risk sexual behaviors, compulsive activities such as eating, spending
    - anything to avoid the anxiety and distress associated with abortion/pregnancy

Inform participants of **cognitive symptoms** of post abortion distress

- High self blame for abortion, assumes total responsibility
- Hopelessness toward future, including future pregnancies
- Seeing self as bad person, undeserving, unworthy
- Black and white thinking about abortion, ie "all good/bad"
- Believe undeserving of help after abortion, even if distressed
- Minimizing, intellectualizing experience to avoid feelings
- Focusing on the topic of abortion in abstract ways, rather than own experience of subjective feelings of abortion
- Inquire if there are other emotions that that are not identified?

Include these in the appropriate symptom domain, write them in.

TASK 2.2 Ask participants to write down all symptoms associated with the pregnancy and the abortion that they have experienced.

- *Which ones have resolved, which are still present?*
- *What is the most distressing symptom NOW that the participant wants to target during the intervention?*
- *How has this been affecting them?*
    - *Be specific, in what areas?*
    - *Have significant others in their life reacted? How?*
- *What have they been doing to manage this symptom?*
- *What is working, what is not working?*
- *What goal do they have for the weekend?*
- *What will they feel like? Act like? Be like? When the symptom is relieved?*
- *How will they know when they have reached the goal*?

2.5 If conflicts associated with the pregnancy or abortion are not resolved, the conflict can be re-enacted as a repeat pregnancy or repeat abortion. Encourage identification of emotions, cognitions, or behaviors of distress.

2C. Explain the risk factors for psychological distress after abortion

- younger age, under 25 years
- keeping abortion a secret from others
- conflict over the decision to abort
- maternal feelings
- feelings attached to the fetus
- pressure from others to abort
- traditional values, or religious affiliation that prohibit abortion
- lack of support of partner, family, others
- pre-pregnancy history of depression, anxiety, trauma disorders
- history of abuse
- conflict with parents
- more than one abortion
- abortion beyond first trimester
- physical complications from abortion procedure
- viewing or contact with the embryo/fetus
- unrealistic expectations after abortion, ie, “its no big deal”
- lack of adequate pre-abortion information

TASK 2.3 Ask if any participants have these risk factors?

- *Which ones?*
- *Have participants list these*
- *Other factors that may have contributing to their distress*

2.6 Inform that healing requires the process of integrating unexpressed memories, emotions, thoughts, beliefs about the event into an integrated whole. This is accomplished through narrating the pregnancy and abortion experience, journaling, giving and receiving support from others, discharging emotions, and resolving guilt.

2D. Provide non-threatening environment for increased understanding, awareness, and insight. Address questions, concerns of distress. This may be the first time some participants have heard this information. Explain that researchers are not in agreement as to the etiology of post abortion distress. Some give more weight to circumstances associated with the pregnancy and abortion others attribute post abortion distress to pre-pregnancy states. Ask participants what they think?

2E. Assess and monitor participant symptoms of post abortion distress

2F. Follow up moderate to severe symptoms of distress, worsening of symptoms

III. *Skill-Building Coping Module*

Goal: To increase positive coping behaviors, introduce new skills, and increase support resources, in order to improve functional progress. Reduce avoidant behaviors, maladaptive or risk-taking behavior.

Rationale: Avoidance of distress results in maladaptive coping. Maladaptive coping can result in dysfunctional grieving, substance abuse, and self-destructive behaviors. Maladaptive coping results in increased mental health problems and decreases functioning after abortion.

Objective 1: Participants will identify triggers that activate symptoms of post abortion distress

Objective 2*:* Participants will identify maladaptive coping behaviors used to manage symptoms. Participant will describe steps to replace these with positive coping skills. Participants will recognize limits, and areas that require further attention for eventual mastery of distress.

Objective 3: Participants will apply coping skills to competently manage distress

Provider strategies

3A. Assist participants to identify of maladaptive coping behaviors of their distress

3B. Encourage transfer of mastery of earlier event to distress now.

3C. Facilitate positive skills for affect regulation, distress tolerance, self soothing among participants

3D. Create atmosphere of warmth, caring, optimism, hope, belief in participants

Participant Tasks

Task. 3.1. Participants will list/ describe via journal how they have managed including healthy and unhealthy ways of coping

Task 3..2. Participants will describe how they would use mastery strategies of earlier event described in Module I, and transfer those strengths to distress now.

Task 3.3 Participants will share some of list and discuss within the group.

Task 3. 4 Participants will use group exercise to formulate list of skills to cope more positively, manage moods, and reduce distressing states

3A. Assist participants to identify maladaptive coping behaviors

3.0 Encourage each to identify negative, self destructive or self defeating coping behaviors to manage symptoms of distress

- When did you start doing this?
- What does it do for you? How does it seem to help?
- How do you feel afterwards?
- What are the risks, benefits? Real and potential
- What are the costs?

3.B Assign to journal: Return to the mastery of an earlier event in Module 1,

- What skills, strengths, and strategies can they transfer from that experience to your abortion experience
    - *what was their inner resolve*
    - *what were beliefs did they have about themselves*
    - *who were they then*
    - *whom do they see themselves as now?*
- What do they need from the group or the intervention to do so ?
- How are they different now than then, how have they grown ?

3.1. Return to the group and discuss journal contents.

3.2 Provide positive feedback and encourage same from participant

3.3 Reinforce strengths, clarify values, support appropriate defenses, list resources, sources of support for participant

3C. Facilitate group discussion to identify positive skills for affect regulation, distress tolerance, self soothing

3.4 Discuss positive coping skills List on black/white board

- seeking out safe persons
- journaling
- self-care activities, list specifics
- exercise
- times to reflect and times to refrain from reflecting on abortion
- reinforce the need sleep, nutrition, hydration, supportive persons, and the effective use of breaks during his time
- teach deep breathing
- relaxation.
- identify self-soothing strategies
- pay attention to feelings, thoughts, experiences associated with their pregnancy/abortion experience.
- others that they can identify?
- avoid or minimize contact with persons who dismiss, invalidate their experience

3.5 Demonstrate healthy coping skills by reinforcing behaviors as participants demonstrate these, such as the use of exercise, deep breathing, healthy eating, etc. as appropriate during the intervention. Provide positive feedback when exercised. Offer a supply of water, healthy snacks, rest times, etc.

3.6 Educate group of the purpose and significance of emotions as sources of energy that are neither good nor bad, but neutral. Emotions signal important information about the truth of our whole experience. For example:

Anger signals that we may have been violated--emotion of power, gives energy--when repressed can become depression.

Sadness signals a loss, yearning --it is how loss is healed.

Fear signals a threat or danger. It aims to protect. In stress responses, fear may be exaggerated, "stuck in overdrive" of old fear associated with the abortion. As you begin to disclose the abortion, fear will dissipate.

Guilt signals a transgression, a violation, it is a healthy voice of remorse

Other emotions *associated with the unintended pregnancy/abortion**?***

When emotions are repressed or blocked, psychological and physical problems erupt.

3.7 If processing painful emotions has not already occurred or is appropriate to repeat, assist with identifying avoidance, painful states. When do these occur? What purpose has avoiding painful emotions served? How is this avoidance affecting you?

3.8 Explain that when abortion not addressed, it may be repressed contributing to depression, anxiety, and behavioral disorders. Healing occurs as emotions are processed in a safe place in order to discharge this energy in a healthy way.

3.9 Interject with humor as appropriate.

3.10 Assist with identification of cognitive distortions concerning themselves, abortion experience, or others:

- polarized thinking
- overgeneralizations
- oversimplification of events
- black and white thinking
- hopelessness
- irrational beliefs (such as perfectionism, invulnerability)
- mind- reading
- denying or minimizing significance of the event
- magical thinking
- assuming all responsibility
- assuming no responsibility, ie blaming others
- emotional reasoning;
    - "If I feel bad, I must be a bad person"
    - "If it feels uncomfortable, it must not be ok"
    - "I have no right to ask for or seek help because I chose abortion," etc.

3.11 Ask how many can identify with these, which ones, discuss in group

IV. Psychotherapeutic Processing of Stressful Event Module

Goal: To reduce the most disturbing intrusive and avoidant symptoms of distress by an initial processing of the pregnancy and abortion experience.

Rationale: By processing key symptoms of distress associated with the pregnancy/abortion experience (emotions of anger, guilt, sadness, fear, etc) and cognitions (conflicts, condemnation etc), participants will reduce anxiety. Unresolved or avoided psychological states can increase anxiety. Treatment of stress responses includes support, emotional validation, and resolution of guilt. Limiting processing to key symptoms, using journal writing, and adhering to specified time frames maintains modulation of arousal to a mild or moderate intensity.

Objective 1: Participants will reduce the intrusive symptoms of distress by limited dosing of disclosure of pregnancy and abortion experience

Objective 2: Participants will reduce the avoidant symptoms of distress by limited dosing of disclosure of pregnancy and abortion experience

Objective 3: Participants will exchange positive support, validation, and identification among group members.

Psychotherapeutic Strategies

4.A. Break participants into small groups of 3- 4. Ensure that groups are free of conflicts, ie not friends, roommates, etc.

4.B. Inform participants that the focus is shifting to address the abortion experience. Inform that they will address this in a dose- by – dose manner

4.C. Instruct participants to take some time by themselves and write about their experience. Emphasize to focus on key aspects of their experience.

4.D. Assess participants' ability to tolerate the assignment and level of distress.

Participant Tasks and Behaviors

Task 4.1 Participants will journal for 1 hour on the most distressing about from their pregnancy/abortion experience

Task 4.2 In small groups, participants will share journal entries as comfortable, Then they will reflect and give feedback on the process.

Method:

4.0 Assign participants to journal:

Write about your pregnancy and abortion experience.

What is the most distressing aspect of the experience?

What did you feel, expect or hope would happen?

Who were the persons there for you?

This exercise should be done in quiet areas. Participants are dismissed for one hour. Return to small group with completed assignment.

Provide for comfortable group seating ie. pillows, tissues, blankets, etc.

4.1. Provide dose by dose approach

Emphasize that pregnancy/abortion can a life altering event for many. Some women address this in pieces. If this is the first disclosure for some, it is important to approach discussing the events in small doses. There may be many and layered thoughts, feelings, beliefs, motivations, and consequences about the pregnancy and abortion event. Encourage participants to share specific journal entries within the small group. Allow each participant 20-30 minutes of uninterrupted time to narrate their experience.

4.2 Provide emotionally supportive environment for participants to narrate experience. Allow participants to sit on floor, pillows.

4.3 Encourage expression of present emotions such as sadness, anger, fear.

4.4 Challenge negative self attributions with affirming statements.
Look for areas of courage, strength, resourcefulness as making the best of difficult, lonely, impossible circumstances, (as applies).

4.5 Encourage step by step disclosure

4.6 Instruct other participants to keep questions to a minimum.

4.7 Remind participants that healthy expression now can reduce distress later.

4.8 Assist with linking thoughts, behaviors, feelings, assumptions.
Reinforce participant strengths, highlight positive aspects/intentions.

4.9 Focus on interpersonal issues expressed, "what did you want from that person(s)?"

4.10 Facilitate expressing emotions in here and now, i.e., what would you have liked to say but didn't? What would you have wanted from that person?

4.11 Provide validation and tolerance of negative and strong emotions
"You have a right to feel sad, angry, upset."

4.12 Note discrepancies, incongruous affect— i.e., reports sad but smiling.

Allow half of the small group to narrate, then take a break. Encourage participants to take a real break and nurture themselves. Inform them that this can be tiring work but will free them up later. Encourage drinking water, rest, fresh air.

Ensure this session ends on a positive note. Group focus will shift from past to present with increased sense of control and competence.

4.13 After all have narrated their experience. Point out strengths of participants. Offer continual soothing and support of what good work they are doing

4.14 Reconvene to larger group for reflection.

Discuss process, how was it for them to share?
Discuss positive and negatives of sharing the experience.
Assess level and tolerance of distress among participants.

4.15 Assist with acceptance of consequences and re-frame experience as unfortunate event, lessons learned, and maturing experience. Re-frame as a defining event that can shape their future from here on.

Reinforce the self-care and growth occurring as they process this experience.

Remind them that pain, negative feelings are part of healing. The work that they are doing now will help them to move into the future less burdened by this experience. They will be freer to move on after addressing this.

Help find ways that they are beginning to make something positive out of it now.

Provide assist with finding ways to make it positive for them.

4.16 Encourage action steps today so that they will begin to experience positive consequences.

4.17 End session on a lighter note. Consider a light or funny story, or children's book that addresses courage, motivation, strength.
This encourages experiencing the event on a less intellectual level.

V. Psychotherapeutic Guilt and Forgiveness Module

Goal: Participants will resolve guilt by identifying and reconciling with key persons from whom they need to seek or receive forgiveness.

Rationale: Forgiveness intervention (Coyle & Enright 1997) and reconciliation after abortion can provide remission of feelings of guilt. (Burke 2004; Angelo 1994; Speckhard 1990)

Objective 1: Participants will identify sources of guilt, fear, anger,

Objective 2: Participants will identify blocks to forgiveness.

Objective 3: Participants will seek/receive forgiveness from key persons.

Provider Strategies

5A. Provide education on importance of resolution of guilt. Describe self destructive impact of guilt on emotions, behavior, self concept, relationships.

5B. Encourage participants to identify key person to whom they feel guilty

5C. Assist participants to identify blocks to forgiveness**.**

Participant Tasks

Task 5.1 Identify person(s) to whom they feel most guilty. Write person's name and feelings toward them . Share in small group

Task 5.2 Draw picture or image of where see self in present of dealing with guilt

Task 5.3 Discuss drawing with group. What do they need to do move through this? If there are blocks , identify these.
Encourage participant how to manage blocks, gaps, pitfalls,

Task 5.4. Write letter to person expressing feeling, asking for forgiveness. Share parts with group as able.

Method

5.1 Gather participants in group.

While in the room, have each find a place by selves to write for 10 minutes to what and to whom do they feel most guilty. Have them describe how they feel, and what they want to say to this person or persons.

Describe the adverse impact of guilt on emotional and physical health reframe this feeling for them, as a sign of health, as normal to feel guilt inform them that they are healthier than those who feel no guilt or remorse after abortion. This reflects more maturity from participants, and that they assume more responsibility for their decision than others who don't feel guilt after abortion.

Invite participants to relate how they typically deal with feelings of guilt. What is the same, what is different now? How is this affecting their lives?

5.2 Encourage to accept self is in a process. Have them draw a picture of where they are in the process of feeling guilty. Have them share within the small group

5.3 Encourage participants to identify those who have some part in abortion decision-making, abortion, etc. This exercise offers a reality check by accounting all those involved. It assigns appropriate involvement rather than focus blame on self, or on one or two persons. List on blackboard. Put self is first person who may need to be forgiven.

5.4 Describe forgiveness as a process. Discuss health aspects of forgiveness Identify blocks to forgiveness.

5.5 Assist with ventilation of guilt, fear, anger; use assertive communication This will be as participants are able. May include only an awareness. .

5.6 Affirm that giving and receiving forgiveness is an important life lesson.

5.7 Explore possibility of reconciliation/making amends with key persons:

What would you like to say to this person?

How would you want things to turn out?

5.8 Consider and encourage the use of faith traditions, rituals as appropriate.

5.9 Assign journal writing

Write 1 letter to each of the persons involved in their pregnancy/abortion experience from whom they want to ask forgiveness.

What do they want to say to them?

What do they imagine or hope the response to be?

Write out their imagined or hoped the response

5.10 Return to group and discuss.

5.11 As participants are able, encourage them to role-play with person whom they find most difficult to reconcile.

5.12 Affirm participants' level of progress.

VI. Psycho-education for Reproductive Mastery Module

Goal: Participants will take action to prevent future pregnancy and abortion

Rationale: Focusing on the pre-conception and conception phase of the unwanted pregnancy will increase awareness of factors that contributed to the pregnancy. These may include contraceptive failure, lack of contraceptive use, high risk sexual behavior**,** denial of capacity for pregnancy or of pregnancy status, etc.

Identifying factors can increase motivation and knowledge to prevent future pregnancies and abortion. New knowledge of fertility increases responsibility to protect themselves more effectively against future pregnancy or abortion.

Objective 1: Participants will identify real or potential reasons for pregnancy

Objective 2: Participants will list specific actions to protect against future unwanted pregnancy..

Objective 3: Participants will increase responsibility for sexual activity by exploring, deciding, and acting on new behaviors to avoid future pregnancy.

Provider Strategies

6A. Provide education on female reproduction, pregnancy, and methods to avoid or protect against future pregnancy

6B. Provide education, explore options, and encourage decision making to resolve another potential unwanted pregnancy, in the event that another one occurred

Participant Tasks

Task 6.1 Identify actual or potential contributors to unwanted pregnancy

Task 6.2 List actions and commitment that they will take or have taken to prevent future unwanted pregnancies

Task 6.3 Increase responsibility for sexual activity by deciding on options for resolution of unwanted now, in case of another unwanted pregnancy.

Methods

Invite women's health provider from university health service to present information on female reproduction, pregnancy, and contraceptive methods to protect against future pregnancies that are available in respective province, state, or country.

Provide literature, on all material that is presented.

Provide opportunity for participants to ask questions, raise concerns in confidential manner

6.1. Allow sufficient time and opportunity for all questions, concerns

6.2. Encourage participants to identify key thoughts, and behaviors factors that

may have contributed to the pregnancy. Target which ones they have control over and which ones they do not.

What behaviors, assumptions, motivations led to the pregnancy?
What needs to change for future? Be specific!!
What do they need to do in order to make those changes?
What persons/resources are needed?
Can they begin an action to do that now?

For example, if pregnancy was the result of casual/high risk sex, drinking or substance abuse, self-neglect--can they take action today to begin to change that? If relationship is abusive, non-supportive, do they need to end it now? Participants will receive support, encouragement, and strength of group members in order to make changes.

Encourage and provide positive feedback for actions taken.

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6.3 Promote self worth by encouraging them to protect their fertility as a precious gift.

6.4 Emphasize that sexual privilege comes with sexual responsibility. If they choose to continue to be sexually active, then they need to responsibly plan for the potential for an unwanted pregnancy before becoming pregnant not afterwards.

6.5 Encourage participants to begin thinking about this now.

6.6 Invite women's health provider to present and have written materials for all options for pregnancy resolution.

6.7 Have participants discuss options within group. List pro and cons of each on blackboard. Have them write out their ideas about this in their journals.

VII. Spiritual Support Processing Module

Goal To reduce spiritual distress associated with abortion .To offer opportunity for closure, containment, giving meaning, and hope for renewed future.

Rationale: Some report dramatic relief of symptoms with mourning and goodbye rituals after abortion (McCall & McCall 1980). By increasing awareness, responsibility, and accountability, participants will increase self efficacy and sense of personal control.

Objective 1: Participant will verbalize optimism/hope for future. (Renewal)

Objective 2: Participant will demonstrate tasks toward closure of grieving such as saying goodbye, receiving forgiveness, reframing circumstance toward acceptance of self and others. (Re-frame)

Objective 3: Participant will identify specific and modifiable behaviors that contributed to unintended pregnancy or abortion. Participant will describe plan of increased protection, responsibility, and competence for future. (Resolve)

Provider Strategies

7A. Assist participant with closing the process of their experience, and clarification of future needs.

7B. Assist with promoting new strategies around reminders, trigger that will arise surrounding their pregnancy/abortion experience.

7B. Encourage present and future orientation with realistic hope

7D. Support participants in what they gained from the intervention

Participant Tasks

Task 7. 1**.** Engage in closure of intervention and grieving as indicated.

Task 7.2 Identify gains from intervention and future needs

Task 7.3 Say goodbye to key persons, providers, and participants. Burn letters, created objects. Receive flowers, and other symbol of new life

Method:

Supplies required: flowers, candles, matches for burning.

7.0 Provide resources for continued post-abortion education, referral

7.1 Assist with identification of abortion triggers, anniversary times, relapse prevention. Encourage healthy ways of re-directing energy; i.e., post-abortion support groups, support others with same experience, safe/validating persons. Encourage follow up with individual therapy as required.

7.2 Provide opportunity to discuss/demonstrate how abortion experience may fits with life, sense of self, and value system.

7.3 Each will have opportunity to share their good-bye to the past, resolve for present, and renewal for future.

7.4 Encourage use of prayer, meditation, or faith tradition as appropriate, ritual mourning for abortion.

7.5 As symbolic good-bye for closure, letters and art work will be burned via lit candle within safe receptacle.

Participants will receive flower as symbolic of a new life.

7.6 Assist with identification of gains and losses, lessons learned, future resolve.

Thank and praise participants for their participation, work and feedback.

Make providers available as required for future.

Remind procedure to complete post test.

VIII. Psychotherapeutic Grief Process Module (OPTIONAL)

Goal: To address grief by facilitating mourning. Some may only be able to cognitively address this, while others may be able to affectively address this depending on composition of the group. Grief can be framed as a loss of embryo, fetus, a loss of part of the self, or part of one's life. At a minimum, recognizing grief will offer a context for making sense out of feelings of depression, sadness, guilt that may be present and addressed at a later time for some.

Rationale: Grief requires an object to focus. Addressing grief defines process with a beginning and end to grieving process. Losses include actual and symbolic losses. Actualizing loss makes it real and reduces pathological grieving. Induced abortion is part of same continuum as perinatal loss (Angelo 1994; Shapiro 1993). Women who abort are at high risk for pathological grief because no object, body, reminders to validate reality of life or death of fetus (Angelo 1994). Standards of care for perinatal loss require actualizing death, facilitation of mourning, and support. (CMA 2001). This section will use language referred to as a loss or that which was lost. Interpretation will be left up to individual according to where she is in her healing process.

Objective 1: Participants are invited to create symbolic representation of loss.

Objective 2: Participants will dialogue with lost object via letter writing

Objective 3: Participants will begin mourning within time and group limits

Provider Strategies

8A**.** Provider will facilitate the grieving process for participants

8B. Provider will provide art materials and encourage participants to create what was actually or symbolically lost for them.

8C. Identify emotional, cognitive, or behavioral symptoms of dysfunctional grief

Participant Tasks

8.1. Through art materials, create what was lost for them

8.2 Begin mourning process

8.3 Participants will share as desired with group what loss meant to them

Method:

8.1 Provide art materials: Clay, paper, paint. music via tape/ CD.

8.2 Encourage participant: *Create what this loss symbolizes to them.*

8.2.1 Provide reflective and soothing environment with classical music in background, no discussion. Allow 20 minutes of creative time.

8.2.2 Encourage acceptance of emotional expression as it emerges. Reassure participants that sadness is normal during this time. It will run its course, have waves, and then end.

8.2.3 At the end of 20 minutes. Assign journal/letter writing:

Write everything that you would want to say to the lost object.
Write this so that you can say goodbye at the end.

Participants are invited to spend time in quiet place alone writing letter for about 30-45 minutes. Frame this as a time to begin to make peace with significant others. This is a process and may not be fully completed at this time.

8.3 Re-convene group after 30-45 minutes. Educate participants of stages of grieving denial, bargaining, anger, depression, and acceptance. Assist with non-judgmental acceptance of selves where they may think they are in process. Process not linear but spiral.

8.4 Encourage participants to share in group what loss meant to them.

8.5 Inform participants that discharging their feelings will help avoid acting them out--such as with self destructive behavior, another pregnancy/abortion. "What doesn't get expressed becomes acted out".

8.6 Normalize grieving for group; assist with tolerating strong emotions.

8.7 Participants are informed that some find consolation in naming fetus if they so choose.

8.8 Assist with noting dysfunctional behaviors to avoid grief prior to group.

8.9 This session ends with encouraging participants to consider how they might like to remember the significant other. What sort of creative ways can be used to remember, say good-bye, give meaning to experience? Some write poem, plant tree, have memorial service, etc. Encourage some way of symbolically saying goodbye within group. This again shifts focus towards taking action in the present and re-creating more hopeful future.

8.10 Continue to reinforce strengths of participants; i.e. intelligence, courage, maturity, competence, and resilience. Remind only emotionally healthy persons can use therapy.

8.11 Take break between sessions. This module moves into the next.