Changes in percentages of perceived met needs for care over time in a Canadian longitudinal cohort

Xiangfei Meng[a,b] Marie-Josee Fleury[a,b] Jean-Marie Bamvita[a,b] Guy Grenier [a,b] Jean Caron[a,b]

[a] Department of Psychiatry, Faculty of Medicine, McGill University, Montreal, QC Canada

[b] Douglas Mental Health University Institute, Montreal, QC Canada

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Abstract

There is a paucity of research on determinants associated with changes in perceived met needs for care over time. This study used a longitudinal cohort to explore changes in percentages of perceived met needs over time and to identify its related determinants. Data analyzed was from a longitudinal community-based survey. A total of 150 participants received at least one type of help both at baseline and the 2-year follow-up. Multivariate analyses were used. Perceived met needs of the study sample slightly increased over time. People who had a higher percentage of met needs at baseline were less likely to have an increase in percentage of perceived met needs at the 2-year follow-up, whereas, those who had a higher value of wellbeing and an increase in the value of mental wellbeing over time, were associated with an increase in the percentage of met needs at the 2-year follow-up. Determinants associated with changes in percentages of perceived met needs could be the target for improving perceived need for mental health care. Findings of this study indicate the need for longitudinal studies in perceived need for mental health services.

Keywords: Determinants; mental health services; perceived needs; longitudinal; trend

1. Introduction

Despite there is a considerable degree of variability by country and region, it is clearly evidenced by many epidemiological surveys that mental disorders are highly prevalent across the worldwide (Kessler and Wang, 2008; Whiteford et al., 2013; Wittchen et al., 2011). Many countries are also challenged by low rates of receiving necessary mental health care or treatment (Andrews et al., 2001; Prins et al., 2009). A US study, based on 2011 National Survey on Drug Use and Health, reported that 62% of adults with any mental illness and 41% of adults with severe mental illness received neither mental health care nor treatment in the previous year (Walker et al., 2015). Notably, there is a difference between the number of people who meet diagnostic criteria of mental disorders in population surveys and the number of people who actually need mental health services for their mental health problems (Han et al., 2017; Mack et al., 2014; Maske et al., 2017; Mechanic, 2003).

Without minimally adequate treatment, individuals, who suffer from mental disorders, are at the increased risk of disease deterioration and functional impairment (Kessler and Price, 1993; Thornicroft et al., 2017). In addition, a better understanding of barriers to treatment contributes for health services planning and allocating limited health resources (Prince et al., 2007). It is essential to identify and overcome barriers to adequate treatment for effectively reducing the burden caused by mental disorders (Stolee et al., 2009).

Perceived needs for care is seen as an important indicator to identify barriers to mental health services use among people suffering from mental disorders (Andersen, 1995). Perceived needs could be categorized into the followings: met needs (receiving help meeting all the expectations), partially met needs (receiving help partially meeting all the expectations), and, unmet needs (receiving no help or the help not meeting the expectations). Data from the WHO World Mental Health Surveys found that unmet or partially met needs and attitudinal barriers (e.g. negative health beliefs, misinterpretations about consequences of treatment, etc.) were major obstacles for seeking new services and staying in treatment among people with mental disorders worldwide (Andrade et al., 2014).

The importance of exploring the prevalence rate of unmet needs and identifying barriers to treatment are generally acknowledged, but most of these studies were cross-sectional, so they cannot derive causal inferences. Over 15% of populations (aged 15 and more) reported having a mental health need in the past 12 months (Sunderland and Findlay, 2013), and up to 40% of people had unmet needs for care (Dezetter et al., 2015). In addition, age differences were reported in terms of perceived needs for mental health care, with older adults having less needs and more likely to have met needs (Forbes et al., 2017). The affordability of psychotherapy and psychosocial intervention services were significantly associated with unmet needs for care (Dezetter et al., 2015). Although Germany has a comprehensive mental health services system that can offer psychotherapy free of charge to patients, their utilization rates was not substantially higher than other comparable European countries (Mack et al., 2014).

There is a lack of research on change in perceived needs for care over time. Many mental disorders tend to be chronic and require ongoing care for substantial periods (McLaughlin, 2004). Understanding the change in perceived needs and determinants associated with the variation can help to identify major barriers to care and treatment among individuals experiencing mental disorders, especially those more vulnerable individuals facing several stressors. However, there is a lack of research on association between determinants and change in perceived needs among people received needs for help.

To fulfill this knowledge gap and lay the ground for change in percentages of perceived met needs, we aimed to explore change in percentages of perceived met needs and its associated determinants over time by using a longitudinal community-based cohort. This research will help to plan mental health services, especially for long-term planning, and to triage determinants according to their associations with change in percentages of perceive met needs and to provide appropriate mental health services to people who need.

2. Methods

2.1 Context

Canada has a publicly funded health care system. Provincial and territorial governments are responsible for most health services delivered within their geographical boundaries. Under the Canada Health Act, the national health insurance program aims to provide all eligible residents of Canada with reasonable access to insured health services on a prepaid basis, without direct charges at the time of service for such services. These services including hospitals, physicians services, prescription drugs, public health, etc. Residence in a province or territory of Canada is the basic requirement for provincial/territorial health insurance coverage. Each province and territory determines its own minimum residence requirements with regard to the eligibility for benefits under its health insurance plan. More details are available from https://www.canada.ca/en/health-canada/services/canada-health-care-system.html.

2.2 Data source

The Montreal South-West Longitudinal Catchment Area Study—Zone d'Épidémiologie Psychiatrique du Sud-Ouest de Montréal (ZEPSOM), is a longitudinal population-based cohort study. In 2007, a total of 2,433 participants (aged 15~ 65 years) were randomly selected to assess the prevalence and incidence of psychological distress, mental disorders, and quality of life and to understand the impact of the social, economic and physical aspects of neighbourhoods on mental health. The cohort represented a population of 269,720 living in the five neighbourhoods of Montreal, with regard to geographical location, population density, and socioeconomic status (Caron et al., 2012). It was based on an ecological model, which makes it unique. A geographic information system (GIS) using different data banks from municipal, provincial and federal instances allowed for more in-depth analysis of inter-relations between mental health and mental disorders as well as several environmental factors from ecological contexts within the study area. The ZEPSOM cohort has comprehensive information on psychological and sociological environmental factors for mental health and mental health problems.

An initial cohort (N= 2,433) was followed through four cycles (2007 to 2015) and a second cohort compensating for attrition of the first cohort (N=1,000) was followed through two cycles (2013-2015). The total sample size of these cohorts at each cycle are T1= 2,433, T2= 1,823, T3= 2,331, and T4= 1,871. The cooperation rate was 48.7% at T1.

The response rate of this longitudinal cohort at T2 was 74.9%, 72% for T3, and 80% for T4. These response rates were little higher than other longitudinal epidemiological studies (69% ~76% for two to five year study (Kosidou et al., 2011; Torvik et al., 2012).

The study was approved by the Douglas Mental Health University Institute Ethics Committee. All participants of the longitudinal study provided a written informed consent to take part in the study. At each wave, all the interviewers received a 1-week training before the data collections, and were closely monitored by a research coordinator during the data collection for interview quality control. The interviewers conducted a scheduled face-to-face meeting either at participant' home or in a research office. The interview generally ranged from 1.5 to 3 hours, depending on whether a mental disorder was discovered. There was a wide range of standard questionnaires in the data collections, including socio-demographic and economic factors, psychological distress, a set of common mental and behavioral problems, instruments on impulsivity, aggression, cognitive functioning, life satisfaction, social support, residents' perception of their neighborhood. More detailed information about this study could be found in the literature (Caron et al., 2012; Fleury et al., 2012; Meng et al., 2017).

2.3 Study sample and design

Because the Perceived Need for Care Questionnaire (PNCQ) was only introduced at the third and fourth waves of this longitudinal community-based study, therefore this present study analyzed the data from these two waves. In this study, we used baseline for the third wave and a 2-year follow-up to indicate the fourth wave.

All participants of the longitudinal cohort were asked to complete the PNCQ questionnaire. Interviews were computer-assisted personal interviews. A total of 1795 participants had complete data on the questionnaire of PNCQ in the past 12 months for problems with emotions, mental health or use of alcohol and drugs at baseline and the 2-year follow-up. Among them, most of participants didn't receive any help either at baseline (81.4%), or the 2-year follow-up (83.2%). This study selected a total of 150 participants (150/163, 92%) who received at least one type of help both at baseline and the 2-year follow-up.

2.4 Dependent and independent variables

The PNCQ was used to gather past 12-months prior to interview information about five categories of perceived need for mental health care (information need, counseling need, medication need, social intervention need, and skills training need) (Meadows et al., 2000a). It assesses help received by individuals who had perceived needs in terms of mental health and/or alcohol, drug and emotional problems. The PNCQ has been extensively used in the field of met needs for care among populations with mental disorders and has shown acceptable reliability and validity, with inter-rater reliabilities greater than 0.6 for kappa (McNab and Meadows, 2004; Meadows et al., 2000b).

The dependent variable - changes in percentages of perceived met needs, was computed by subtracting the percentage of perceived met needs over the number of types of help received at baseline from the percentage of perceived met needs over the number of types of help received at the 2-year follow-up.

Table 1 provides a full list of characteristics examined in this study. **Table 2** provides a detailed summary of questionnaires/scales used for selected independent variables. For time-variant independent variables, their changes were calculated by applying the difference between measurements at baseline and the 2-year follow-up, whereas time-constant variables, such as gender, and variables that remain constant for all participants, such as age, we used their measures at baseline.

2.5 Statistical analyses

Univariate, bivariate and multivariate analyses were used to explore determinants associated with the changes in percentages of perceived met needs for mental health care between baseline and the 2-year follow-up. The univariate analyses were comprised frequency distributions for categorical variables (numbers, percentages), and central tendency measures for continuous variables (means, standard deviations). Bivariate linear regression analyses were carried out between changes in percentages of perceived met needs and each independent variable separately.

As recommended by Dalecki & Willits (1991) (Dalecki and Willits, 1991) in examining change using regression analysis, percentage of perceived met needs at baseline was considered as an independent variable in the model of change in percentage of perceived met needs. For time-variant independent variables, their measurements at baseline and their changes during the 2-year follow-up were included in the initial model building process.

All independent variables with the alpha value less or equal than 0.20 in bivariate analyses were moved to multivariate analyses. Total variance explained by the final model was calculated. We tested goodness-of-fit of the final model. Multivariate collinearities of variables were also checked.

3. Results

3.1 Characteristics of the study sample

The mean age of the study cohort was 46. The study sample had more females (68%) than males (32%). Most participants (82%) had a family physician at baseline, and this proportion increased to 83% at the 2-year follow-up. The most prevalent mental disorder was major depression (29% at baseline, and 22% at the 2-year follow-up). There were 45% participants having a suicidal ideation at baseline and then increased to 47% at the 2-year follow-up. Overall, the percentage of perceived met needs increased from 85% at baseline to 94% at the 2-year follow-up. A total of 110 participants (73.3%) reported no change of perceived met needs during the 2-year follow-up, 8% of participants had decreased perceived met needs and 18.7% of participants had increased perceived met needs over the 2-year follow-up. Changes in percentages of perceived met needs over the 2-year follow-up were significantly different from zero (t=3.12, $p<0.05$).

3.2 Determinants associated with changes in met needs over the 2-year follow-up

Table 3 summarizes all the independent variables potentially associated with changes in percentages of perceived met needs over the 2-year follow-up from bivariate

analyses. Those variables ($p< 0.20$) were selected as potential determinants of changes in percentages of perceived met needs. A total of 14 variables (Delta civil status, civil status at baseline, Delta mental wellbeing, mental wellbeing at baseline, presence of aggression against objects at baseline, presence of physical aggression at baseline, total number of stressful events at baseline, total distress score at baseline, functional disability at baseline, Delta social support, social support at baseline, household income at baseline, Delta whether or not having a family physician, and Delta perceived safety score) were kept for further analyses ($p<0.20$). Other variables listed in the **Table 1** were not considered for multivariate analysis, as they had p-values >0.20 in bivariate analyses.

As shown in **Table 4**, only three variables were remained in the final model. Delta mental wellbeing score and mental wellbeing score at baseline were positively associated with change in percentages of perceived met needs. Percentage of met needs at baseline was negatively associated with change in percentages of perceived met needs. People who had a higher percentage of met needs at baseline were less likely to have an increase in change of percentages of perceived met needs during the study period; people who had a higher value of mental wellbeing and had a bigger increase of mental wellbeing, were linked with an increase in percentage of perceived met needs at the 2-year follow-up. All these variables explained 73% of the variance in change in percentages of perceived met needs. The final model fitted well. Multicollinearity tests did not suggest a multicolinearity problem in the final model (all VIF<1.5).

4. Discussions

The present study used data from a longitudinal cohort to explore what determinants associated with change in percentages of perceived met needs for care. To our knowledge, this is the first study to explore change in percentages of perceived met needs and its associated determinants over time. We found that the change in percentages of met needs slightly increased over time. People who had a higher percentage of perceived met needs at baseline were less likely to have an increase in percentage of met needs at the 2-year follow-up, whereas, those who had a higher value of mental wellbeing and an

increase in the value of mental wellbeing over time, were associated with an increase in percentage of met needs at the 2-year follow-up.

There is a paucity of research on the trend of perceived met needs for care among people suffering from mental disorders using longitudinal studies. Meadows and Bobevski compared the two Australian national surveys of mental health and wellbeing conducted in 1997 and 2007 and found that there was a reduced rate of perceived unmet needs (Meadows and Bobevski, 2011). In this study, a slightly increase in perceived met needs over time is in the direction of *priori* hypotheses we set out to test and can be seen as a result of hoped outcomes from the perspectives of mental health services systems that strive for service provision and mental health literacy. In 2005, the Quebec (Canada) Ministry of Health and Social Services developed a mental health action plan (2005-2015), which aimed to improve accessibility, quality and continuity of care. Studies have found that this Quebec mental health action plan succeed in improving primary care services with new adult primary care teams and one-stop services primarily focused on clients with common mental disorders (Fleury et al., 2017; Fleury et al., 2016). Another possible explanation for the increase in percentages of perceived met needs over time is that mental health literacy may improve over time. Studies have shown that improved mental health literacy is associated with better identification and satisfaction of needs (Jorm et al., 2006).

A second finding of this study was the identification of two factors associated with change in percentages of perceived met needs. Notably, we found that people who perceived higher scores in mental wellbeing and had an increase in mental wellbeing over time linked with an increase in percentages of perceived met needs. To some extent, this finding is in line with previous literature. People who have a higher score of psychological wellbeing are less likely to have the presence of psychiatric disorders and lower level of disability (WHO, 2012). What we identified here adds further evidence to support what Slade discussed in his paper on the importance of positive psychology (Slade, 2010). Mental health services should be re-orientated around promoting mental wellbeing. Action can be taken to promote positive mental wellbeing at the individual, community and system level. Individuals' empowerment and participation could be the

focus of mental wellbeing promotion at a range of environments or settings, such as home, school, community, etc. (CIHI, 2009).

In additional, we also found that percentage of perceived met needs at baseline were linked with changes in percentages of perceived met needs. It is not uncommon to see the inverse relationship between a higher percentage of perceived met needs and a lower increase in change of percentages of perceived met needs over time. It is relatively easier to have a bigger increase among people with lower percentages of perceived met needs, as they have a large room to improve their satisfaction on perceived met needs (Zalenski and Raspa, 2006).

4.1 Strengths and limitations

With this longitudinal cohort, we were able to explore the change in percentages of perceived met needs for help and its related factors, which is consistent with the nature of chronic mental disorders and changes in perceived needs in real-world settings. There are several limitations to be noted. Firstly, this study was a secondary data analysis using the data from a developed country. Implications of the study findings in developing countries may be limited. There was no measure on the severity of each mental disorder, therefore the severity of psychopathology was not considered in the analyses. Secondly, this study selected people with the completed module of perceived needs for care, and received at least one type of help at both baseline and the 2-year follow-up. The sample cannot represent the target population of this longitudinal cohort, as this study sample only selected those who received at least one type of help both at baseline and the 2-year follow-up. Thirdly, due to the constraint of sample size, we did not perform subgroups analyses to explore percentage changes in each type of perceived needs. For instance, the relationship between mental wellbeing and change in percentages of perceived met needs should be further explored within the subgroups of perceived needs to examine what kind of perceived met needs associated with mental wellbeing. More studies are warranted to explore dynamic changes in each type of perceived met needs and their determinants, as they will have implications on health planning and health policy making.

5. Conclusions

The longitudinal study found that the overall perceived met needs slightly increased over time. Mental wellbeing score at baseline, change in mental wellbeing score, and percentage of perceived met needs at baseline were associated with changes in percentages of perceived met needs. These predictors could be the potential target for improving perceived need for mental health care. Furthermore, this study points out the need for further research to understand the change in percentages of perceived met needs over time.

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Conflict of interest

The author reports no conflicts of interest with this study.

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Table 1

Characteristics potentially linked to changes in perceived met needs

Characteristics	Data used in the analyses
Socio-demographic variables	
Age	2-year follow-up
Gender	2-year follow-up
Civil status (single or not)	Change in the 2-year
Education (number of years)	Change in the 2-year
Born Country (Canada vs. other)	2-year follow-up
Household income	Change in the 2-year
Whether or not worked in the past 12 months	Change in the 2-year
Number of weeks worked in the past 12 months	Change in the 2-year
Aggressive behaviour*	
Presence of verbal aggression	Change in the 2-year
Presence of aggression against property	Change in the 2-year
Presence of auto-aggression	Change in the 2-year
Presence of physical aggression	Change in the 2-year
Stressful events*	
Number of Stressful events	Change in the 2-year
Childhood mistreatment	2-year follow-up
Perceptions of health*	
Self-perceived physical health**	Change in the 2-year
Self-perceived mental health**	Change in the 2-year
Spirituality*	
Importance attributed to spirituality**	Change in the 2-year
Quality of life*	
Total quality of life score	Change in the 2-year
Emotional well-being score	Change in the 2-year
Personal Well-Being score	Change in the 2-year
Social support*	
Total social support score	Change in the 2-year
Neighborhood perception*	
Perceived safety score	Change in the 2-year
Neighborhood behavior score	Change in the 2-year

Healthcare service use*	
Whether or not having a family physician	Change in the 2-year
Numbers of professionals visits	Change in the 2-year
Having a private insurance coverage including visits to psychologist	Change in the 2-year
Satisfaction with the health services*	Change in the 2-year
Clinical variables*	
Mental disorders [major depressive episode, *mania, panic disorder, social phobia, agoraphobia, posttraumatic stress disorders (PTSD), addiction (alcohol + drug dependence*)	*Baseline*
Number of mental disorders: for only the following disorders *(major depressive episode, general anxiety disorder*)	Change in the 2-year
Alcohol and drug dependence	Change in the 2-year
Total psychological distress score	Change in the 2-year
Cognitive impairment score	Change in the 2-year
Functional disability	Change in the 2-year
Suicidal ideation	Change in the 2-year

**In the previous 12 months*; ***Dimensions measured by a 5-point Likert scale*

Table 2

A summary of questionnaires and scales used in this study

Blocks	Variables	Questionnaire or scale	Abbreviations
Predisposing factors	Socio-demographic variables	Canadian Community Health Survey questionnaire	CCHS 1.2
	Spirituality	Canadian Community Health Survey questionnaire	CCHS 1.2
	Mental wellbeing	Mental Health Continuum–Short Form	MHC-SF
Need factors	Aggressive behaviour	Modified Overt Aggression Scale	MOAS
	Stress	Number of stressful events	
	Perceptions of health	Self perceived mental and physical health	CCHS 1.2
	Mental disorders	Composite International Diagnostic Interview	CIDI
	Psychological distress	Kessler Psychological Distress Scale	K-10
	Cognitive impairment	Montreal Cognitive Assessment	MOCA
	Functional disability	WHO Disability Assessment Schedule 2.0	WHODAS 2.0
Enabling factors	Social support	Social Provisions Scale	SPS
	Neighborhood perception	Perceived Safety Score	SECA
		Neighborhood Behavior Score	VOI
	Mental health service use	Canadian Community Health Survey questionnaire	CCHS 1.2

Table 3
Predictors of changes in percentages of met needs: Bivariate results (p-value<0.20)

Variables	Standardized Coefficients Beta	*t*	*P-value*	95.0% Confidence Interval for Beta	
				Lower CI	Upper CI
Percentage of met needs at baseline	-0.83	-17.77	<0.001	-1.02	-0.81
Delta civil status	-0.10	-1.89	0.06	-19.88	0.42
Civil status at baseline	-0.08	-1.61	0.11	-13.57	1.40
Delta wellbeing score	0.12	2.51	0.01	0.08	0.71
Wellbeing score at baseline	0.26	5.44	<0.001	0.47	1.01
Presence of aggression against objects at baseline	-0.13	-2.27	0.03	-20.37	-1.41
Presence of physical aggression at baseline	-0.13	-2.23	0.03	-32.18	-1.92
Total number of stressful evens at baseline	-0.09	-1.60	0.11	-2.78	0.29
Distress at baseline	-0.16	-3.13	0.002	-1.30	-0.29
Delta functional disability	-0.07	-1.41	0.16	-0.39	0.07
Functional disability at baseline	-0.15	-2.98	<0.01	-0.55	-0.11
Total social support score at baseline	0.13	2.57	0.01	0.11	0.83
Delta social support score	0.08	1.50	0.14	-0.11	0.82
Household income at baseline	0.10	1.84	0.07	<0.001	<0.001
Delta perceived safety score (neighborhood perception)	-0.11	-1.94	0.05	-6.03	0.06
Delta whether or not having a family physician	0.13	2.45	0.02	2.55	23.91
Whether or not having a private insurance coverage at baseline	0.14	1.57	0.12	-0.03	0.25

Table 4

Predictors of changes in percentages of perceived met needs: Linear regression model

Variables	Standardized Coefficients Beta	*t*	*P-value*	95.0% Confidence Interval for Beta		Collinearity Statistics	
				Lower CI	Upper CI	Tolerance	VIF
Intercept	58.29	8.57	<0.001	44.84	71.75		
Delta wellbeing score	0.40	2.51	0.01	0.08	0.71	0.82	1.23
Wellbeing score at baseline	0.74	5.44	<0.001	0.47	1.01	0.79	1.27
Percentage of met needs at baseline	-0.95	-19.32	<0.001	-1.05	-0.85	0.96	1.04

Total variance explained: R^2=0.73; Goodness-of-fit: F = 124.02; P<0.001.

VIF=Variance inflation factor