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Prevalence, psychosocial correlates and service utilization of depressive and anxiety disorders in Hong Kong: the Hong Kong Mental Morbidity Survey (HKMMS)

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Abstract

Purpose Data on mental disorder prevalence and health service utilization required to inform healthcare management and planning are lacking in Hong Kong. The current study determined the prevalence of common mental disorders (CMD), and examined the patterns of mental health service utilization and associated factors.

Methods We analyzed data from the Hong Kong Mental Morbidity Survey (HKMMS) of 5,719 Chinese adults aged 16–75 years in the general Hong Kong population, using the Chinese Revised Clinical Interview Schedule (CIS-R).

Results The weighted prevalence estimate for any past-week CMD was 13.3 %, with mixed anxiety and depressive disorder being the most frequent diagnoses. CMD was positively associated with female gender, being divorced or separated, alcohol misuse, substance dependence, lack of regular physical exercise, and a family history of mental disorder. Among individuals with CMD, only 26 % had consulted mental health services in the past year; less than

10 % consulted general practitioners or family physicians. Lack of mental health service usage was significantly more likely in men and those with lower educational attainment.

Conclusions Apart from attention to psychosocial risks, health and lifestyle factors are important considerations for mental health promotion. Service utilization for individuals with CMD in Hong Kong remains suboptimal, and would be enhanced by strengthening community primary care.

Keywords Health service utilization · Mental health · Mental disorders · Prevalence · Epidemiology

Introduction

Public health concern about the growing global burden of mental disorders [1] has prompted the establishment of numerous nation-wide psychiatric surveys in the past few decades. Epidemiological data from nationally representative surveys have consistently shown that mental illnesses

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affect approximately one-third of the population over their lifetime [2–5]. In a recent survey using multistage random sampling methods to identify psychiatric morbidity in 63,004 adults in 96 urban and 267 rural primary sites in 4 provinces of China, the 1-month prevalence of any mental disorder was 17.5 % (95 % CI 16.6–18.5). Among people with a diagnosable mental illness, only 8 % had ever sought professional help, and only 5 % had ever seen a mental health professional [6]. Despite the high prevalence of mental disorders and increasing illness recognition, health service utilization was suboptimal. Even in developed countries, less than one-third of people with diagnosable mental disorders seek professional help for their respective conditions. Barriers to mental health service use are related to male gender, lower educational attainment, and anxiety disorders [7–11].

The Hong Kong Special Administrative Region (SAR) is a metropolitan city with a special administrative structure at the southern tip of China. Despite the changing demographics in the past two decades, information about mental health in the city has been limited. In the past decade, several telephone surveys were conducted in the Hong Kong general adult population to collect data on specific disorders, using survey instruments devised on the basis of DSM-IV criteria. Data from these surveys showed that six-month prevalence of GAD was 4.1 % [12], and 12-month prevalence of major depressive episode (MDE) was 8.4 % [13]. The Hong Kong Mental Morbidity Survey (HKMMS) is the first territory-wide face-to-face psychiatric epidemiological study in a representative general Hong Kong population sample. The study adopted a two-phase design, closely modeled on the British Adult Psychiatric Morbidity Survey (APMS) [14]. For the HKMMS, a structured diagnostic interview—the Chinese version of the Revised Clinical Interview Schedule (CIS-R) [15]—was administered to a randomly selected sample of 5,719 Chinese adults aged 16–75 years in Hong Kong. We aimed to evaluate the updated prevalence rates and psychosocial correlates of depressive and anxiety disorders, defined as Common Mental Disorders (CMD) in the present report. We also examined the pattern of mental health service utilization for these conditions, as well as factors affecting service use in the Chinese community of Hong Kong.

Materials and methods

Design and sampling

The HKMMS employed a stratified, multi-stage sampling design, with all face-to-face interviews being conducted between November 2010 and May 2013.

In Phase 1, the research team assessed 5,719 Chinese participants aged between 16 and 75 years. A random stratified selection of addresses was provided by the Census and Statistics Department of the Hong Kong SAR Government. For each address identified, advance letters were sent to introduce the survey. For each eligible household, a trained lay interviewer administered the Phase 1 assessment to a household member whose birthday was closest to the day of interview. Inclusion criteria were (1) Aged between 16 and 75 years; (2) Ethnically Chinese; (3) Birthday closest to the date of first selected interview; and (4) Consent for participation. Addresses with no eligible participants or unknown eligibility were replaced with another address from the same geographical region and housing types. Refusals were not replaced. The overall cooperation rate for the whole sample was 68 %, calculated on the basis of completed interviews divided by completed interviews, refusals and known eligibility without response.

Phase 2 consisted of three subsidiary parts. At Phase 2a, clinicians interviewed participants with positive answer to a psychotic screen questionnaire to ascertain the diagnoses of psychotic disorders with Structured Clinical Interview for the DSM-IV (SCID-2). Phase 2b measured the psychosocial correlates of suicidal ideations and behaviors. Phase 2c evaluated the specificity of the CIS-R. A randomly selected sub-sample of participants (2 %) who were screened negative at Phase 1 were invited for a second interview with SCID by clinicians. During the specificity check, 110 participants who scored below CIS-R cutoff were randomly invited for clinician interviews. None had current diagnoses of mental disorder. Seven had life time diagnoses of CMD.

Written informed consent was obtained from all participants at each study phase. This study was conducted in accordance with the ethical standards in Declaration of Helsinki. The protocol for the HKMMS was approved by the Clinical Research Ethics Committees of the Chinese University of Hong Kong, the University of Hong Kong, and the Hospital Authority. The current report focused on findings of Phase 1 study only.

Assessments

Information on basic socio-demographic attributes was collected. Non-psychotic symptomatic morbidity was assessed using the Chinese version of the Revised Clinical Interview Schedule (CIS-R) [15, 16], with diagnoses of CMD according to the International Classification of Diseases (ICD-10) [17]. The CIS-R is a fully-structured interview schedule administered by lay-interviewers. It has been used extensively in the UK for epidemiological surveys, and has good validity and reliability in community studies [18]. Criterion validity of Chinese CIS-R, developed for the HKMMS, was determined by comparison with

the psychiatrists-rated Chinese-bilingual Structured Clinical Interview (CB-SCID-I/P) for Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV). The association between the Chinese CIS-R and CB-SCID-I/P diagnoses of depression and anxiety disorders were significant (Kappa coefficient for depression, 0.68 (SE 0.06, $p < 0.001$); Kappa coefficient for anxiety disorders, 0.41 (SE 0.06, $p < 0.001$)). The inter-rater reliability of Chinese CIS-R was also satisfactory (Intraclass correlation coefficient, 0.997 (95 % CI 0.994–0.998, $p < 0.001$). Receiver-operating-characteristic (ROC) curves were generated to determine the threshold scores for clinical significance. A cutoff of 12 or over (similar to the English CIS-R) also indicated significant psychological symptoms in the local Chinese population. This threshold has also been validated in previous epidemiological surveys to determine clinically significant psychiatric morbidity [14, 18]. With patient group as the state variable, this cutoff score had the highest area under the curve (AUC) achieving a sensitivity of 0.69 and a specificity of 0.93.

The CIS-R produces scores for 14 categories of symptoms, comprising somatic symptoms, fatigue, concentration and forgetfulness, sleep problems, irritability, worry about physical health, depression, depressive ideas, worry, anxiety, phobias, panic, compulsions and obsessions. A total score was generated by summing the 14 scores, which provided an indication of the symptom severity of CMD. A cut-off score of CIS-R $\geq$ 12, as estimated in the validation study above, was used to define a case of CMD. ICD-10 diagnoses of 6 CMD (depressive episode, generalized anxiety disorder GAD, mixed anxiety and depressive disorder MADD, phobia, obsessive compulsive disorder OCD and panic disorder) were generated with same algorithm used in the Adult Psychiatric Morbidity Survey in England (2007) [19].

Service utilization for mental health problems

Information about mental health service usage was collected by asking participants whether or not they had visited psychiatric or non-psychiatric health professionals in the past year for reasons concerning their mental health complaints. The types of service inquired included psychiatrists, non-psychiatrist specialists, general practitioners, family physicians, psychologists, nurses, mental health professionals, traditional Chinese medicine practitioners, social workers and counsellors. The type of treatment included pharmacotherapy and non-drug therapies.

Statistical analysis

Statistical analyses were performed using STATA version 12.0 [20]. To yield findings representative of the Hong Kong population [21], prevalence estimates were adjusted by using sampling weights that reflected the proportion of the population in each stratum that was included in the sample. Specifically, adjustments were made for differential age, gender, and housing type distributions. Standard errors (SE) were estimated using the delete-1 jackknife repeated replication method in STATA. Prevalence estimates (%) were presented with 95 % confidence intervals (95 % CI) calculated from the SE. Psychosocial, clinical and functional correlates of CMD were determined as follows: (1) Core demographic and lifestyle characteristics; (2) Life Event Checklist [22]; (3) Physical illness burden as evaluated by the Cumulative Illness Rating Scale (CIRS) [23]. Logistic regression analysis was conducted with significant associative factors as independent variables to identify the role of different factors associated with CMD.

We investigated the pattern of service utilization for mental health problems in the past year. Factors associated with mental health service use were assessed using univariate and multivariate logistic regression. Crude models examined the relationships between socio-demographic factors, service use and types of CMD, while adjusted models controlled for a range of characteristics and confounders associated with service utilization. In the multivariate models, significant socio-demographic variables were mutually adjusted. Results are presented as odd ratios (ORs) and 95 % confidence intervals (95 % CI). These analyses were again conducted using the survey command in STATA.

Results

Prevalence of CMD

The one-week prevalence of any CMD, defined as CIS-R scores $\geq$12, was 13.3 % (95 % CI 12.40–14.20) (Table 1). The mean CIS-R score was 5.49 (95 % CI: 5.29–5.70), with women scoring significantly higher than men ($z = -11.89$; $p < 0.0001$). The one-week prevalence estimates for specific psychiatric diagnoses are also presented in Table 1. The most common disorder was mixed anxiety and depressive disorder (MADD), with approximately 1 in 14 (6.9 %; 95 % CI 6.24–7.60) participants meeting its ICD-10 diagnostic criteria. This was followed closely by generalized anxiety disorder (GAD), with an overall prevalence of 4.2 % (95 % CI 3.70–4.74). Depressive episode and other anxiety disorders (OAD; includes panic disorders, all phobias, and obsessive compulsive disorder) had the lowest prevalence estimates of 2.9 % (95 % CI 2.47–3.31) and 1.5 % (95 % CI 1.16–1.77) respectively. Women had higher prevalence estimates than men across

Table 1 Weighted prevalence (95 % CI) of past-week common mental disorders

	N	Prevalence % (95 % CI)				
		Any CMD[a]	Depressive episode	GAD	MADD	OAD[a]
Gender						
Male	2,348	9.38 (8.14–10.61)	2.20 (1.63–2.77)	2.99 (2.28–3.69)	4.72 (3.80–5.65)	1.00 (0.59–1.41)
Female	3,371	16.94 (15.65–18.23)	3.54 (2.93–4.15)	5.36 (4.61–6.12)	8.97 (7.97–9.96)	1.89 (1.44–2.34)
Age (years)						
16–25	690	11.32 (8.85–13.79)	0.55 (0–1.10)	2.60 (1.40–3.80)	7.56 (5.47–9.65)	0.99 (0.26–1.72)
26–35	834	16.46 (13.91–19.01)	2.86 (1.69–4.03)	4.76 (3.26–6.26)	8.94 (7.01–10.86)	1.55 (0.73–2.38)
36–45	1,166	13.51 (11.58–15.45)	2.60 (1.73–3.47)	3.60 (2.57–4.63)	7.96 (6.42–9.51)	1.32 (0.69–1.95)
46–55	1,345	12.60 (10.84–14.36)	3.55 (2.63–4.48)	4.57 (3.51–5.63)	5.90 (4.61–7.18)	1.80 (1.13–2.48)
56–65	1,100	13.64 (11.62–15.67)	3.77 (2.66–4.87)	4.84 (3.58–6.10)	5.99 (4.59–7.39)	1.64 (0.89–2.39)
66–75	582	11.20 (8.67–13.73)	4.70 (2.99–6.40)	5.52 (3.67–7.37)	3.60 (2.16–5.03)	1.24 (0.30–2.18)
Total	5,719	13.3 (12.40–14.20)	2.9 (2.47–3.31)	4.2 (3.70–4.74)	6.9 (6.24–7.60)	1.5 (1.16–1.77)

CMD common mental disorder, *GAD* generalized anxiety disorder, *MADD* mixed anxiety and depressive disorder, *OAD* other anxiety disorder

[a] Participants could have more than one CMD or OAD; weights are applied for age, gender and housing types

all psychiatric diagnoses. While prevalence rates for depressive episode and GAD increased with age, the opposite trend was observed for MADD. Among subjects with CMD, 84.7 % had one diagnosis and 3.1 % had two or more comorbid CMD.

Common mental disorders and psychosocial correlates

Table 2 displays CMD prevalence estimates across sociodemographic characteristics alongside the adjusted odds ratios (ORs) and 95 % confidence intervals (95 % CI) that represent their association. Women had higher rates of CMD, as did people in the younger age groups. Divorced, separated or widowed participants had a higher prevalence than married/cohabiting individuals, even after adjustment for other variables. Participants living in public housing had higher likelihood of having CMD than those living in private housing, although the strength of the association diminished after controlling for confounders. Household income was unrelated to CMD (p = 0.69). Perceived financial difficulties were associated with CMD. There were age differences in the prevalence of MADD, which decreased with increasing age (Adjusted OR for age 66–75 years 0.27 (95 % CI 0.12–0.63) compared to the 16–25 years group). Immigration status (<7 years of stay) was not associated with presence of any CMD.

Hazardous drinking and substance dependence in the previous year, and lack of regular physical exercise were significantly associated with higher prevalence rates, and this remained after controlling for potential confounding variables. Multivariate analysis showed that chronic

medical illness was associated with higher odds of CMD. Finally, participants with one or more stressful life events had substantially higher CMD prevalence estimates.

Mental health service utilization

Twenty-six percent (95 % CI 22.8–29.1) of participants had consulted a health professional for mental health problems in the past year (Table 3). Professional service use was most common in those with "other anxiety disorders" (OAD) (46.2 %; 95 % CI 34.8–57.5) and depressive episode (45.2 %; 95 % CI 37.6–52.8), whereas participants with MADD were least likely to seek professional consultation (16.0 %; 95 % CI 12.4–19.6). Compared to participants with a single diagnosis, those with comorbid CMD were more likely to have visited a health professional within the past 12 months (31.7 versus 49.5 %). Most sought professional help from psychiatrists and social workers. Consultations with non-psychiatric medical specialists were consistently infrequent across all CMD (<10 %). Only 8.9 % (95 % CI 4.6–13.3) of subjects with depressive episode and 8.2 % (95 % CI 4.7–11.6) of those with GAD had consulted general practitioners or family physicians for their mental health problems in the past year (Table 3). Among those who had consulted medical practitioners, 71.1 % received medication only, 6.7 % received talking therapy only and 22.2 % received both.

For participants with CMD, mental health service users were more likely to be older (p < 0.05), female, divorced/separated/widowed, retired or unemployed/not working, and with lower educational level (p < 0.01 for all) (Table 4).

Table 2 Adjusted socio-demographic correlates of past-week CMD

	N	Prevalence of CMD % (95 % CI)[a,b]	Crude OR (95 % CI)	Adjusted OR (95 % CI)[b]
Gender				
Male	2,348	9.38 (8.14–10.61)	1	1
Female	3,371	16.94 (15.65–18.23)	2.02 (1.72–2.38)*	1.89 (1.41–2.52)*
Age				
16–25	690	11.32 (8.85–13.79)	1	1
26–35	834	16.46 (13.91–19.01)	1.50 (1.12–2.02)*	1.33 (0.80–2.20)
36–45	1,166	13.51 (11.58–15.45)	1.34 (1.01–1.78)*	0.64 (0.38–1.09)
46–55	1,345	12.60 (10.84–14.36)	1.21 (0.91–1.60)	0.35 (0.20–0.61)*
56–65	1,100	13.64 (11.62–15.67)	1.29 (0.97–1.72)	0.28 (0.15–0.53)*
66–75	582	11.20 (8.67–13.73)	1.08 (0.77–1.51)	0.13 (0.05–0.30)*
Marital status				
Married/cohabiting	3,361	11.59 (10.49–12.69)	1	1
Single	1,583	11.93 (10.27–13.59)	0.99 (0.83–1.19)	1.00 (0.70–1.43)
Divorced/separated	485	28.96 (24.83–33.09)	3.04 (2.44–3.79)*	2.01 (1.36–2.97)*
Widowed	289	21.64 (16.83–24.46)	2.08 (1.55–2.79)*	1.55 (0.92–2.64)
Employment status				
Working	3,294	11.25 (10.14–12.37)	1	1
Retired	937	12.49 (10.35–14.63)	1.19 (0.96–1.48)	1.47 (0.88–2.45)
Unemployed/not working	490	30.39 (26.26–34.52)	2.06 (1.75–2.43)*	1.26 (0.93–1.72)
Household income (HKD, monthly)				
Below 15,000	2,064	19.25 (17.52–20.99)	1	1
15,000–24,999	1,159	10.43 (8.60–12.27)	0.47 (0.38–0.58)*	0.76 (0.53–1.09)
25,000–39,999	994	9.63 (7.74–11.52)	0.43 (0.34–0.54)*	0.68 (0.46–1.03)
40,000–59,999	572	11.43 (8.71–14.14)	0.50 (0.38–0.66)*	0.97 (0.62–1.53)
Above 60,000	596	10.52 (7.99–13.06)	0.46 (0.35–0.61)*	1.02 (0.62–1.67)
Financial difficulties (perceived)				
No	4,638	9.57 (8.70–10.44)	1	1
Yes	1,079	31.42 (28.54–34.40)	4.35 (3.71–5.11)*	3.20 (2.42–4.23)*
Type of housing				
Private housing	3,392	11.81 (10.70–12.92)	1	1
Public housing	2,327	16.45 (14.94–17.95)	1.52 (1.31–1.76)*	0.98 (0.74–1.30)
Smoking habit				
Current smoker	718	17.83 (14.93–20.73)	1.47 (1.19–1.80)*	1.09 (0.72–1.66)
Ex-smoker	421	14.17 (10.81–17.54)	1.15 (0.87–1.52)	1.09 (0.65–1.83)
Non-smoker	4,574	12.48 (11.51–13.46)	1	1
Hazardous drinking in past year				
Yes	281	22.02 (16.96–27.08)	1.79 (1.34–2.40)*	2.04 (1.19–3.51)*
No	5,432	12.81 (11.91–13.71)	1	1
Substance dependence in past year				
Yes	125	33.59 (24.97–42.21)	3.31 (2.27–4.82)*	3.13 (1.63–6.04)*
No	5,593	12.87 (11.98–13.77)	1	1
Regular exercise				
Yes	816	9.30 (7.27–11.34)	0.62 (0.48–0.80)*	0.62 (0.46–0.85)*
No	2,349	14.45 (12.98–15.91)	1	1
Family history of mental disorder				
Yes	793	12.31 (11.37–13.25)	1.71 (1.42–2.08)*	1.24 (0.90–1.71)
No	4,923	19.65 (16.82–22.49)	1	1

Table 2 continued

	N	Prevalence of CMD % (95 % CI)[a,b]	Crude OR (95 % CI)	Adjusted OR (95 % CI)[b]
Number of life events				
None	1,937	6.69 (5.53–7.85)	1	1
Any life event (1+ events)	3,755	16.70 (15.48–17.92)	2.88 (2.38–3.50)*	2.07 (1.55–2.76)*
Chronic medical illness (CIRS)	2.47 (1.98)	–	1.40 (1.35–1.45)*	1.55 (1.44–1.67)*

* $p < 0.05$

[a] Weighted sample adjusted to data from 2,011 Hong Kong Population Census

[b] Adjusted for age, gender, education, marital status, working status, type of housing, financial difficulty, smoking habits, hazardous drinking, substance dependence, family history of mental disorder, life events, cumulative illness rating (CIRS)

Table 3 12-month mental health service utilization ($N = 5,589$)

Type of professional seen[a]	No CMD % (SE)	Depressive episode % (SE)	GAD % (SE)	MADD % (SE)	OAD % (SE)	Any CMD % (SE)	Single diagnosis % (SE)[c]	≥2 diagnoses % (SE)[c]
Psychiatrist	2.3 (0.2)	26.8 (3.4)	21.6 (2.6)	6.8 (1.3)	25.6 (5.0)	13.8 (1.2)	18.1 (2.4)	29.5 (4.5)
Non-psychiatric specialist	0.2 (0.1)	2.4 (1.2)	2.9 (1.1)	0.3 (0.3)	6.4 (2.8)	1.3 (0.4)	1.5 (0.8)	4.8 (2.1)
General practitioner and family physician	1.0 (0.1)	8.9 (2.2)	8.2 (1.8)	3.5 (0.9)	9.0 (3.3)	5.9 (0.9)	8.5 (1.7)	8.6 (2.7)
Mental health professional [b]	0.2 (0.1)	4.8 (1.6)	2.4 (1.0)	0.8 (0.4)	1.3 (1.3)	1.6 (0.5)	1.5 (0.8)	4.8 (2.1)
Psychologist	0.4 (0.1)	7.7 (2.1)	5.7 (1.5)	2.0 (0.7)	9.0 (3.3)	3.9 (0.7)	5.0 (1.4)	8.6 (2.7)
Social worker/counselor	1.0 (0.1)	19.0 (3.0)	11.8 (2.1)	6.3 (1.2)	19.2 (4.5)	9.3 (1.1)	9.7 (1.8)	20.0 (3.9)
Traditional Chinese Medicine practitioner	0.1 (0.1)	3.6 (1.4)	1.2 (0.7)	1.0 (0.5)	7.7 (3.0)	1.8 (0.5)	2.3 (0.9)	3.8 (1.9)
Any mental health service usage	4.5 (0.3)	45.2 (3.9)	35.9 (3.1)	16.0 (1.8)	46.2 (5.7)	26.0 (1.6)	31.7 (2.9)	49.5 (4.9)

CMD common mental disorder, *GAD* generalized anxiety disorder, *MADD* mixed anxiety and depressive disorder, *OAD* other anxiety disorder

[a] Participants with psychotic disorders were excluded

[b] Community psychiatric nurses, other nursing services, and occupational therapists

[c] Depressive episode, GAD, all phobias, panic disorder or obsessive compulsive disorder

Discussion

Prevalence of CMD

The HKMMS provides estimates of the one-week prevalence of ICD-10 diagnoses of CMD. The overall weighted prevalence estimate was 13.3 %, which is comparable with recent estimates of community prevalence of mood disorders in both China and western countries [6, 19, 24]. The proportion of different subtypes of CMD was very similar compared to that reported by the England and Chile studies, both adopted a similar methodology [19, 24]. MADD was the most prevalent diagnosis, followed by GAD and depressive episode. As ICD-10 defines MADD as the presentation of mixed affective symptoms that do not meet criteria for depression or specific anxiety disorders, the high prevalence of MADD in our survey and other community studies [19, 24, 25] may suggest that symptom presentation of mood disturbances in the community are

less differentiated than clinic populations of relatively specific syndromes of anxiety or depressive disorders. Compared to an epidemiological study conducted in Shatin district of Hong Kong in the 1980s with the lifetime prevalence of depressive disorder (DSM-III diagnosis, men 1.3 %, women 2.4 %) was similar to the HKMMS (1-week prevalence with ICD-10 diagnosis, 2.9 %) [26]. GAD was, however, of higher prevalence in the Shatin survey (men 7.8 %, women 11.1 %). It is possible that subjects with GAD in the Shatin survey could possibly be identified as either GAD or MADD with ICD-10 diagnostic criteria in the HKMMS.

There was also an apparent association between CMD diagnosis and age. MADD appeared to be more common in the younger age groups, whereas the prevalence of depressive episode and GAD was higher in the older age groups. As associative factors of specific mood disorders vary among different age groups, this possibly contributes to the age differences in prevalence of different CMD. In

Table 4 Factors associated with no mental health service use in participants with CMD (N = 764)

	Absence of mental health service use[a]	
	Crude OR (95 % CI)	Adjusted OR (95 % CI)[b]
Age		
16–25	2.28 (1.12–4.66)*	1.13 (0.31–4.13)
26–45	1.30 (0.84–2.04)	0.79 (0.37–1.68)
46–60	0.99 (0.63–1.56)	0.79 (0.40–1.56)
61–75	1	1
Gender		
Male	1.92 (1.28–2.88)*	2.16 (1.35–3.46)*
Female	1	1
Education level		
No schooling/primary	1.91 (0.68–5.36)	3.56 (1.07–11.86)*
Primary	0.53 (0.30–0.91)*	0.93 (0.44–1.98)
Lower secondary	0.89 (0.52–1.51)	1.49 (0.73–3.03)
Upper secondary	1.12 (0.70–1.81)	1.46 (0.82–2.61)
Post-secondary	1	1
Marital status		
Married/cohabiting	1.07 (0.69–1.64)	1.23 (0.68–2.21)
Single	1	1
Divorced/separated	0.51 (0.30–0.85)*	0.68 (0.34–1.33)
Widowed	0.35 (0.19–0.65)*	0.61 (0.27–1.40)
Employment status		
Working	1	1
Retired	0.60 (0.38–0.95)*	0.42 (0.19–0.89)*
Housewife	0.83 (0.49–1.40)	0.90 (0.49–1.67)
Student	1.77 (0.72–4.32)	0.89 (0.24–3.29)
Unemployed/not working	0.44 (0.29–0.67)*	0.54 (0.32–0.91)*
Household income (HKD, monthly)		
Below 15,000	0.63 (0.39–1.02)	1.07 (0.56–2.03)
15,000–39,999	0.91 (0.53–1.55)	0.97 (0.53–1.76)
Above 40,000	1	1
≥2 diagnoses[c]	0.29 (0.19–0.44)*	0.28 (0.17–0.44)*
Substance/alcohol abuse	1.01 (0.56–1.83)	0.72 (0.36–1.43)

* p < 0.05

[a] Participants with common mental disorder only, those with psychotic disorders were excluded

[b] Logistic regression adjusted for other demographic variables

[c] Depressive episode, GAD, all phobias, panic disorder or obsessive compulsive disorder

younger age groups, the mixed symptom presentation in MADD may be related to different psychosocial influence such as life style, psychotropic substance or alcohol misuse on mood symptoms. In older age, physical health issues may be associated with a more specific presentation of pure depressive or anxiety symptoms. As with previous studies, female gender, unfavorable psychosocial situations and stressful life events were associated with a higher risk of having CMD. The demographic correlates in HKMMS are consistent with most other psychiatric population surveys. On the other hand, we found that higher physical health burden, lifestyle factors including substance misuse and lack of regular physical exercise were associated with CMD. These findings suggested the importance of a healthy life style in achieving good physical and mental health.

Mental health service utilization

The overall proportion of people with CMD seeking mental health service for their mental health problems was less than 30 %. The decision to seek treatment is based on the individual's judgment that the origins, duration and extent of symptoms warrant it [27]. On the other hand, people with psychiatric comorbidity had higher rates of service utilization, reflecting a more severe mental disturbance. Among different diagnoses, persons with depressive episode and OAD more frequently sought help from services. This may be related to a generally more impaired psychosocial functioning in depressive disorders and the more complicated anxiety disorders such as obsessive compulsive disorder or panic disorder. Studies of rates of mental health service utilization have all demonstrated a large gap

between the prevalence of mental disorders and the proportion of people who actually receive treatment. As reported by the World Mental Health Survey analysis of 17 countries, service utilization in developed cities ranged from 4.3 % in Italy to 17.9 % in the USA [11]. Even among those with mental health problems, studies have generally reported health professional consultation rates of less than 40 % [3, 28, 29]. In the recent report of psychiatric service reception in China, the service use rate was extremely low: only 5 % of people with mental disorders had ever consulted mental health professionals [6]. The utilization rates were much lower in mainland China than Hong Kong [6]. While stigmatization is still a major barrier to help seeking in both places, the fee charging policy for medical and health services in China is different from the heavily subsidized health care in Hong Kong. This may account for discrepancy in mental health services utilization between Hong Kong and Mainland China.

The rates of traditional Chinese medicine (TCM) utilization for mental health problems had been very low (1.8 %), compared to a previous community study when 8.8 % of people consulted TCM practitioners for any health problems in the past month [30]. It is possible that some participants had consulted TCM practitioners for somatic symptoms, but did not recognize that their symptoms were psychological in nature leading to under-reporting. Similarly, as there is only limited availability for psychological treatments by psychologists in Hong Kong, help seeking from clinical psychologists (CP) (3.9 %) had been low as compared to western countries.

The primary care medical sector is underdeveloped in Hong Kong. Our HKMMS study revealed that most participants who sought help did so from psychiatrists, rather than primary care physicians. Less than 10 % of people received services from either family physicians or general practitioners for their mood problems in the past year, while CMD affected 13.3 % of all adults in Hong Kong. The high proportion of psychiatric consultations may partly reflect positive bias towards invitation for interviews by people who had received psychiatric care; the observation may also reflect a lack of availability for primary care service. The insufficient coverage of primary care services is also a possible major barrier to low mental health service utilization. Until the mental health service is strengthened substantially in the primary care sector, it would not be possible to serve the large volume of people seeking help. Engagements with primary care medical practitioners to enhance their interests and skills in treating CMD, and special incentives for offering medical consultations are important considerations in mental health care planning designed to narrow the service gap.

While under-utilization is a universal phenomenon, the significance of contributing factors may differ in different social contexts. The people with CMD who were least likely to make contact with services in Hong Kong were men, those with lower educational attainment, and those who were currently working. Apart from the general impression that men are less ready to seek help, it is also important to note that employment affects help seeking. Although it could be argued that being in active employment implies better functioning, work also hinders availability for contacting health care services even when there is a need. These observations have implications for policy planning. Community education aimed at increasing awareness of mental disorders need to pay special attention to men and working individuals, and service provision should be designed to enhance the logistics of help seeking.

HKMMS is a cross-sectional study aiming at collection of mental health data in the community, and findings must be interpreted in the context of its limitations. First, while we have assessed over 5,700 participants and adjusted for population characteristics in the prevalence estimates, there may still have been biases in the participation rate (68 %). Second, direct comparison of prevalence rates with other epidemiologic studies using different methodologies in Chinese communities has been limited, especially when prevalence rates of different time intervals were estimated. Third, owing to the cross-sectional nature of this study, the inference of causation from associations must be cautious and constrained. Fourth, in our estimation of service use, we relied only on self-reports of help seeking for mental health problems. There was no objective medical documentation for confirmation. Fifth, we did not have information on health service use for problems unrelated to mental health issues. Due to the nature of this survey, it would be difficult to evaluate the extent of medical consultations arising from mental health problems not recognized by the person who seeks help. As medically unexplained symptoms are commonly related to mood disorders, the current estimates of mental health service utilization may be under-reported due to the lack of information about these symptoms.

Conclusions

The HKMMS is the first territory-wide epidemiological survey of mental health data in Hong Kong. The estimated prevalence of CMD was comparable to most developed cities globally. Socio-demographic and health factors are correlated with the risks of being diagnosed as CMD. Service utilization for CMD is suboptimal, with less than 30 % of people with CMD seeking help for their problems in the past year. Very few participants sought help from primary care practitioners (<10 %). An underdeveloped primary care medical sector may bar people from seeking

help. From the perspective of primary prevention, mental health policy addressing the care of people with CMD should focus on the associative health and life style factors. Strengthening of community primary care would be a prerequisite for enhancing help seeking pathway for people in need.

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