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Motivations to quit smoking and challenges faced during cessation among individuals with first episode psychosis in Singapore

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Aims: The prevalence of smoking has been noted to be higher among individuals with mental illness, particularly among those with schizophrenia and related psychosis than in the general population. The present paper sought to examine the motivations and challenges to quit smoking among first episode psychosis patients (N = 281) enrolled in the Early Psychosis Intervention Programme (EPIP) in Singapore.

Methods: Questionnaires were used to collect details on an individual's smoking status, cessation attempts, motivations to quit, and challenges to stop smoking. Using baseline data, multiple linear regressions were conducted to examine the socio-demographic correlates of motivations and challenges of smoking cessation behaviour.

Results: Of the study sample, 59.4% reported to have never smoked while 39.9% were currently smoking or had attempted smoking. Health reasons and cost were the most highly endorsed motivations to stop smoking; whereas cravings, stress, and boredom were highly endorsed as challenges to stop smoking. Socio-demographic factors such as age, educational level, and marital status were also found to be associated with the motivations to stop smoking and challenges faced during smoking cessation.

Conclusions: The present study highlights the most highly endorsed motivations and challenges reported among individuals with first episode psychosis (FEP) in an Asian population. Given that the literature examining motivations and challenges to quit smoking has predominantly focused on the general population, results from the current study have implications for the formulation of smoking cessation programmes targeted at individuals with mental illness, particularly those with FEP.

KEYWORDS

barriers, cessation, motivations, psychosis, smoking

1 | INTRODUCTION

The World Health Organization (WHO) has estimated tobacco use to be responsible for approximately six million deaths across the world each year (World Health Organization, 2015). According to the 2010 National Health Survey among Singapore residents, 14.3% reported smoking daily, 2.0% were occasional smokers, 7.7% were ex-smokers

and 76.0% were non-smokers (Ministry of Health, 2011). The social costs of smoking in Singapore was estimated to be US$479.8 million in 2014, with direct healthcare costs amounting to US$14.9 million (Cher, Chen, & Yoong, 2017).

Smoking prevalence has been noted to be higher among individuals with mental illness than in the general population, particularly among those with schizophrenia and related psychosis (Esterberg &

Compton, 2005; Lasser et al., 2000). Lasser et al. (2000) for instance, reported lifetime smoking rates for those with no mental illness, lifetime mental illness and past-month mental illness to be 39.1%, 55.3% and 59.0% respectively. Likewise, in a meta-analysis examining the association between schizophrenia and tobacco smoking, schizophrenia patients were on average found to be 5.3 times more likely to be current smokers than those in the general population, irrespective of country (de Leon & Diaz, 2005).

The higher prevalence of smoking among individuals with schizophrenia and related psychosis has been attributed to the common genetic and neurobiological mechanisms (eg, abnormalities in cholinergic and dopaminergic systems) implicated in the pathophysiology of psychosis and nicotine dependence (de Leon & Diaz, 2012; Grossman et al., 2017; Kumari & Postma, 2005; Wing, Wass, Soh, & George, 2012). Higher use of cigarettes in this population has also been linked to self-medication, whereby smoking is used to reduce psychiatric symptoms and moderate cognitive deficits associated with this disorder (Kumari & Postma, 2005; Leas & McCabe, 2007; Leung, Gartner, Dobson, Lucke, & Hall, 2011; Smith et al., 2009).

Literature examining the motivations to quit smoking and the barriers faced during smoking cessation has predominantly focused on the general population. Some of the reasons identified as motivators to quit include health reasons, cost, parental pressure and the unpleasant smell associated with smoking (Hesketh, Lu, Jun, & Mei, 2007; Loukas, Murphy, & Gottlieb, 2008; Tanihara & Momose, 2015; Turner & Mermelstein, 2004). Whereas, reasons identified for smoking relapse were smoking as a coping mechanism during stress, the need to experience pleasure, smoking environment both at home and at work (Buczkowski, Marcinowicz, Czachowski, & Piszczek, 2014; Dhumal et al., 2014), social influence, the perception of quitting as a distant event, reluctance to access cessation support and boredom (Cosh, Hawkins, Skaczkowski, Copley, & Bowden, 2015).

While substantial research has been done in the general population, the literature pertaining to motivations to quit smoking and the challenges faced during the cessation process among individuals with first episode psychosis (FEP) is scant (DeRuiter, Cheng, Gehrs, Langley, & Dewa, 2013; Grossman et al., 2017). Furthermore, some studies have found evidence for cultural differences in cessation attempts (eg, Loukas et al., 2008). In contrast to western countries, Li et al. (2010), found older smokers in Malaysia and Thailand to be more likely to attempt cessation as compared to younger adults. Other studies have also suggested differences in social and religious norms in a society to have an effect on tobacco use and cessation attempts (Ghouri, Atcha, & Sheikh, 2006). In examining Muslims in Malaysia and Buddhists in Thailand, Yong, Hamann, Borland, Fong, and Omar (2009) found the majority of both groups to report their religious leaders as having encouraged them to quit smoking and identified them as an important source of motivation to quit the habit. Given the multicultural population in Singapore, it is unclear if these cultural differences observed in previous studies would be replicated in the present sample.

Examining the motivations and challenges faced during smoking cessation among individuals with mental disorders, particularly among those with schizophrenia and related psychosis is crucial given that smoking cessation rates among those with psychosis (27.2%) has been shown to be lower than those with no mental illness (42.5%) (Lasser et al., 2000). In addition, these individuals receive less support to quit smoking (Leas & Mccabe, 2007), and often lack the motivation and self-efficacy (Mann-Wrobel, Bennett, Weiner, Buchanan, & Ball, 2011) necessary to engage in sustained behaviour change to accomplish smoking cessation (Mann-Wrobel et al., 2011). These factors coupled with the higher prevalence of smoking among those with mental illness, places this group at a greater risk of mortality as compared to the general population.

As such, identifying the motivations to quit smoking among this vulnerable population would be an essential step to help tailor smoking cessation programmes to better suit the needs of these individuals. In view of this, the present paper examines the motivations to quit smoking and challenges experienced during the quitting process among FEP patients enrolled in the Early Psychosis Intervention Programme (EPIP).

2 | METHODS

2.1 | Sample

The present paper utilized data from an on-going longitudinal study examining smoking and alcohol habits among FEP patients who were enrolled in the EPIP and were seeking treatment at the Institute of Mental Health (IMH) or its satellite clinics (N=281). EPIP is an integrated, patient-centred programme led by a multidisciplinary team of psychiatrists, psychologists, case managers, social workers and occupational therapists who seek to manage those with psychosis (Verma, Poon, Subramaniam, Abdin, & Chong, 2012). Participants between 15 to 40 years, who were enrolled in the EPIP programme over a period of 2.5 years, capable of providing consent, able to read and understand English were included in the study. The study involved three visits; the first interview took place within 3 months of the individual joining the EPIP programme (baseline) while the second and third interviews were conducted 6-months and 1-year later. Only baseline data was used for the current paper. Participants who were agreeable then proceeded to provide written informed consent and completed a series of questionnaires on the iPad. Parental consent was obtained for participants below the age of 21 years. Ethics approval was obtained from the National Healthcare Group Domain Specific Review Board.

2.2 | Measures

2.2.1 | Socio-demographic questionnaire

Data on age, gender, marital status, ethnicity, educational level, employment status and religion were collected.

2.2.2 | Smoking-related questions

Smoking-related questions included items pertaining to an individual's smoking status (Have you ever smoked?), their frequency of smoking (During the past 30 days, on how many days did you smoke cigarettes?), the number of cigarettes smoked in their entire life (ie,

10 cigarettes or less, 11-100 cigarettes, more than 100 cigarettes), and their duration of smoking (How long have you been smoking cigarettes?).

Details on cessation attempts were also gathered; these included items on their last cessation attempt, the number of times they have attempted cessation, and the longest time period they have ever stopped smoking.

In addition, questions on motivations to stop smoking (ie, health reasons, sports performance, cost, family, friend[s], boyfriend or girlfriend) and challenges to stop smoking (ie, household members who smoke or use tobacco, cravings, fear of weight gain, mood swings or personality changes, friends who smoke or use tobacco, girlfriend or boyfriend who smokes, parties, stress, fitting in with your friends or a social group, school habit, fatigue, boredom, feeling sad) were also asked. Participants were required to choose all applicable items from the list. They were also provided the option to specify other relevant reasons or endorse the following item "I am not motivated to stop smoking at all right now."

2.3 | Statistical analyses

Statistical analyses were carried out with SAS version 9.2. Descriptive analyses were performed to obtain the frequency distribution of the sample. Multiple logistic regressions were conducted to examine the socio-demographic correlates of motivations and challenges of smoking cessation behaviour. All statistically significant results were reported at $P < 0.05$.

3 | RESULTS

3.1 | Sample characteristics

Table 1 shows the socio-demographic distribution of the sample. The average age of the sample (N = 281) was 25.78 years (SD = 6.24), with ages ranging from 15 to 40 years old. The majority were males (50.5%), of Chinese ethnicity (70.8%) and never married (85.1%).

3.2 | Smoking status and cessation attempts

Of the total sample, 59.4% had never smoked (n = 167), 33.8% were current smokers (n = 95), 3.6% were social smokers (n = 10), and 2.5% were ex-smokers (n = 7). The majority reported having tried a cigarette between the ages of 18 and 21 years. Of those who reported smoking in the past year (n = 89), majority (61.8%) reported smoking at regular intervals during the day followed by 23.6% who reported smoking whenever they were around others who smoke. Of the sample, 106 reported having attempted smoking cessation, of these, 66.04% (n = 70) had attempted cessation 1 to 2 times, 20.75% (n = 22) attempted cessation 3 to 5 times, and 13.21% (n = 14) had attempted cessation 6 or more times. No significant associations were found between socio-demographic characteristics and smoking cessation behaviour.

TABLE 1 Socio-demographic characteristics of sample

Variable		Mean	SD
Age		25.78	6.24
		n	%
Gender	Female	137	48.8
	Male	142	50.5
Ethnicity	Chinese	199	70.8
	Malay	41	14.6
	Indian	25	8.9
	Other	14	5.0
Education level	Secondary and below	19	6.8
	O/N levels[a]	58	20.6
	A levels[b]	20	7.1
	Diploma	109	38.8
	University	22	7.8
Marital status	Never married	239	85.1
	Ever married	40	14.2
Employment status	Working/NS[c]	117	41.6
	Student/homemaker	78	27.8
	Unemployed	78	27.8
Religion	Christian	69	24.6
	Buddhist/Taoist	80	28.5
	Hindu	14	5.0
	Islam	56	19.9
	Others	60	21.4

[a]O/N levels: Educational qualification obtained at the secondary level.
[b]A levels: Educational qualification obtained at the post-secondary/pre-university level.
[c]NS (National Service): Requirement for all male Singaporean citizens and permanent residents to undergo a period of compulsory service in the uniformed services.

3.3 | Motivations to stop smoking

The two most highly endorsed motivations to stop smoking were health reasons (67.92%) and cost (55.66%), while the least endorsed motivations were friends (14.15%), and boyfriend or girlfriend (14.15%). Other reasons provided for attempting smoking cessation included pets, religion, pregnancy or desire to start a family. Multiple logistic regression analyses were conducted to examine the socio-demographic correlates of the top two motivations (ie, health reasons and cost). Only marital status was found to be a significant correlate of health reasons as a motivator to stop smoking. No significant correlates were found for cost as a motivator to quit smoking (Table 2).

Some of the highly endorsed challenges to stop smoking among those who were currently smoking/had ever tried to stop smoking were cravings (37.7%, n = 46), stress (40.16%, n = 49) and boredom (38.52%, n = 47). Multiple logistic regression analyses were conducted to examine the socio-demographic correlates of these top three highly endorsed challenges to stop smoking. Those who were unemployed (odds ratio [OR] = 0.303, P = 0.033) were less likely to endorse stress as a barrier to quitting compared to those who were employed. With regards to boredom, those who were older (OR = 0.897, P = 0.026) and those who had completed 'A' levels

TABLE 2 Socio-demographic correlates of motivations to quit smoking (health reasons and cost)

| | Motivations to quit smoking | | | | | | | |
| | Health reasons | | | | Cost | | | |
	OR	95% CI		P value	OR	95% CI		P value
Variables								
Age	1.036	0.936	1.147	0.495	0.944	0.864	1.032	0.205
Gender								
Female	Reference							
Male	1.409	0.441	4.498	0.562	1.364	0.460	4.046	0.575
Ethnicity								
Chinese	Reference							
Malay	0.556	0.153	2.025	0.374	1.232	0.372	4.077	0.733
Indian	0.578	0.105	3.173	0.528	1.804	0.371	8.778	0.465
Other	0.731	0.057	9.355	0.810	0.358	0.026	4.836	0.439
Marital status								
Never married	Reference							
Ever married	0.069	0.013	0.362	**0.002**	0.499	0.123	2.022	0.330
Education level								
University	Reference							
Secondary and below	0.526	0.049	5.612	0.594	1.866	0.217	16.009	0.570
O/N levels[a]	0.820	0.100	6.744	0.854	5.722	0.765	42.829	0.089
A levels[b]	d				6.533	0.364	117.272	0.203
Diploma	0.604	0.084	4.332	0.616	4.057	0.595	27.672	0.153
Employment status								
Working/NS[c]	Reference							
Student/homemaker	0.791	0.155	4.038	0.778	1.087	0.255	4.642	0.910
Unemployed	0.335	0.097	1.154	0.083	0.943	0.316	2.818	0.917

Abbreviations: CI, confidence intervals; OR, odds ratio.
[a]O/N levels: Educational qualification obtained at the secondary level.
[b]A levels: Educational qualification obtained at the post-secondary/pre-university level.
[c]NS (National Service): Requirement for all male Singaporean citizens and permanent residents to undergo a period of compulsory service in the uniformed services.
[d]Not estimated due to small sample size.

[subject based qualification completed prior to university] (OR = 0.037, P = 0.020) were less likely to endorse it as a challenge to stop smoking compared to younger adults and those who had completed university respectively. No significant correlations were found for endorsement of cravings as a barrier to quit smoking (Table 3).

4 | DISCUSSION

The prevalence of smoking in our FEP sample was 39.9% (those who were currently smoking/have ever attempted smoking). This figure was significantly lower than rates reported in other FEP samples such as Grossman et al. (2017) who reported a smoking prevalence of 53% among young adults (20-24 years old) with FEP in Canada, and Kotov, Guey, Bromet, and Schwartz (2010) who found 52.4% of patients with psychosis to be current smokers and 69.3% to be lifetime smokers in the United States. The relatively lower prevalence of smoking in our FEP sample as compared to other countries is to some extent reflective of the overall lower rate of smoking seen in Singapore in comparison to other countries. For instance, in a meta-analysis conducted by de Leon and Diaz (2005) across 20 nations, the prevalence of current smoking was found to range between 16% and 58%, with Singapore

having the lowest prevalence and Ireland having the highest. The lower prevalence of smoking in Singapore can be attributed to the strict tobacco control policies that are in place including the high taxation rate on tobacco use, bans on tobacco advertising and smoking in certain public places (Amul & Pang, 2018).

However, consistent with past literature which has shown a preponderance of smoking behaviour among individuals with schizophrenia and related psychosis (eg, Esterberg & Compton, 2005; Lasser et al., 2000), the prevalence of smoking in our FEP sample (15-40 years old) was higher than the prevalence of current smokers reported in the Singapore general population (FEP sample: 39.9%; general population: 16%) (Picco, Subramaniam, Abdin, Vaingankar, & Chong, 2012). In particular, the prevalence of smoking among those aged 18 to 34 years old (age group comparable to our study) in the general population was 20.2% (Picco et al., 2012).

Among the highly endorsed motivations to stop smoking in the present study were health reasons and cost. These reasons were concordant with studies conducted in the general population (eg, Loukas et al., 2008). Villanti, Bover Manderski, Gundersen, Steinberg, and Delnevo (2016) for instance, found physical fitness (64%) and cost of tobacco (64%) to be the most popular reasons for quitting smoking among US young adult current smokers and former smokers. Likewise,

TABLE 3 Socio-demographic correlates of Challenges to Quit Smoking (Cravings, Stress, Boredom)

	Challenges to quit smoking								
	Cravings			Stress			Boredom		
	OR	95% CI		P value	OR	95% CI		P value	OR	95% CI		P value

Variables	OR	95% CI		P value	OR	95% CI		P value	OR	95% CI		P value
Age	0.945	0.865	1.032	0.207	0.927	0.841	1.021	0.123	0.897	0.815	0.987	**0.026**
Gender												
Female	Reference											
Male	1.288	0.464	3.576	0.627	0.735	0.270	1.999	0.547	1.653	0.574	4.758	0.351
Ethnicity												
Chinese	Reference											
Malay	0.963	0.318	2.921	0.947	0.564	0.179	1.777	0.328	0.937	0.306	2.873	0.910
Indian	1.141	0.279	4.670	0.855	0.201	0.036	1.120	0.067	1.190	0.275	5.146	0.816
Other	1.103	0.124	9.798	0.930	1.924	0.247	15.013	0.532	0.625	0.066	5.937	0.682
Marital status												
Never married	Reference											
Ever married	0.286	0.062	1.318	0.108	1.993	0.476	8.352	0.345	0.512	0.119	2.201	0.368
Education level												
University	Reference											
Secondary and below	0.716	0.095	5.389	0.745	0.476	0.060	3.768	0.482	0.227	0.028	1.851	0.166
O/N levels[a]	1.740	0.283	10.701	0.550	0.957	0.139	6.590	0.964	0.575	0.091	3.638	0.557
A levels[b]	0.964	0.096	9.707	0.975	2.113	0.188	23.799	0.545	0.037	0.002	0.600	**0.020**
Diploma	0.613	0.105	3.573	0.586	0.405	0.065	2.509	0.332	0.164	0.026	1.030	0.054
Employment status												
Working/NS[c]	Reference											
Student/hHomemaker	1.566	0.443	5.536	0.486	0.674	0.181	2.512	0.557	0.595	0.153	2.311	0.453
Unemployed	0.956	0.337	2.715	0.933	0.303	0.101	0.910	**0.033**	1.115	0.383	3.252	0.841

Abbreviations: CI, confidence intervals; OR, odds ratio.
[a]O/N levels: Educational qualification obtained at the secondary level.
[b]A levels: Educational qualification obtained at the post-secondary/pre-university level.
[c]NS (National Service): Requirement for all male Singaporean citizens and permanent residents to undergo a period of compulsory service in the uniformed services.

Buczkowski et al. (2014) found current and former smokers to be largely motivated by health concerns, with many expressing an intention to quit due to the need to improve health, alleviate smoking-related problems as well as due to the fear of a future tobacco-related disease. With regards to clinical populations, FEP and chronic schizophrenia patients in Esterberg and Compton's (2005) study have also been shown to cite better health as a motivator to quit smoking.

In particular, those who ever married were less likely to report health reasons as a motivation to stop smoking than those who were never married in our study. While majority of the studies have found associations between marital status and prevalence of smoking behaviour (eg, Cho, Khang, Jun, & Kawachi, 2008; Pennanen et al., 2014), to the best of our knowledge, no studies have examined the role of marital status in relation to specific motivators to quit. One possible reason for the current finding might be that while health reasons may be an important motivator to quit among individuals who were married; family pressures, children or pregnancy may be a more determining factor in this group.

Besides health reasons, cost was identified as one other important motivator to quit smoking. Several studies have observed cost to be a central factor in the intention to quit. Tanihara and Momose (2015) found that while Japanese male current smokers endorsed cost

as an important motivator for smoking cessation, the endorsement of cost as a motivator to quit was found to differ by nicotine dependence level, whereby the 'rise of cigarette prices' as a motivator for cessation increased significantly at the medium nicotine dependence level but was not significant at the high nicotine dependence level (Tanihara & Momose, 2015). Other studies such as Cosh et al. (2015), have found cost issues to be equally endorsed as a motivator to quit by both females and males (18-29 years old) in an Aboriginal Australian sample. Surprisingly, no significant correlates were found for cost as a motivator to quit in the current study.

The lack of significant findings with regards to socio-demographic correlates of motivators to quit is surprising given substantial evidence for the cessation process to be gendered (Dhumal et al., 2014; Surani et al., 2012), with females being more likely to quit due to image issues (Grøtvedt & Stavem, 2005; Sohlberg, 2015) and males due to athletic performance/physical fitness (Cosh et al., 2015; Grøtvedt & Stavem, 2005; Turner & Mermelstein, 2004). However, majority of the aforementioned studies have been conducted in the general population. Of the few studies which have been conducted in the clinical populations, Filia et al. (2014) found an absence of association between gender and readiness/motivation to quit among smokers with psychosis (schizophrenia, schizoaffective and bipolar

affective disorder). This lack of significance was attributed to the elevated level of nicotine dependence in the psychosis population (compared to the general population) which could have masked the effects of gender (and possibly other socio-demographic correlates) (Filia et al., 2014; Tanihara & Momose, 2015)

Cravings, stress and boredom were identified as the main challenges to stop smoking among individuals with FEP in our sample. This was partially consistent with Esterberg and Compton's (2005) findings, whereby 'cravings when around people who were smoking' was identified as a barrier to cessation attempts among FEP and chronic schizophrenia patients. Other studies such as Villanti et al. (2016) have also found similar reasons ('loss of a way to handle stress': 59% and 'cravings or withdrawal': 52%) among US young adult current and former smokers.

In the present study, those who were unemployed were less likely to endorse stress as a barrier to quitting compared to those who were employed. Studies have predominantly associated unemployment with a lower likelihood to attempt cessation and higher tendency to relapse (eg, Jung, Oh, Huh, & Kawachi, 2013). The opposite result in this study might be due to the higher job stress and demands faced by employed individuals (as compared to the unemployed) which may result in smoking being used as a mechanism to cope with stress (Jung et al., 2013).

Those who were older and had completed 'A' levels were also less likely to endorse 'boredom' as a challenge to stop smoking compared to younger adults and those who had completed university respectively. However, we are unable to account for these findings due to a lack of supporting literature.

The present study findings should be considered in view of the study limitations. While the motivations and challenges encountered during the cessation process were examined in the study, these were not examined in relation to actual quit attempts. Esterberg and Compton (2005) noted that while patients with schizophrenia and related psychosis were aware of the adverse health effects associated with smoking and endorsed this as an important motivator to quitting, many felt that the pros of smoking outweighed the cons. Thus, examining the motivations or intentions to quit in relation with actual quit attempts would provide more valuable information in aiding the formulation of smoking cessation programmes. Despite this, the present study was one of the few studies which has examined the motivations to quit smoking and challenges encountered during cessation among individuals with FEP.

5 | CONCLUSION

The present study among individuals with FEP found that the most frequently endorsed motivations to quit smoking were health reasons and cost whereas, the most frequently reported barriers faced during the cessation process included cravings, boredom and stress. While there were some significant findings, the role of socio-demographic characteristics with respect to motivations and challenges to quit smoking yielded limited evidence in the current sample as compared to the general population.

AVAILABILITY OF DATA AND MATERIAL

Data is not available for online access, however readers who wish to gain access to the data can write to the senior author Dr Mythily Subramaniam at mythily@imh.com.sg with their requests. Access can be granted subject to the Institutional Review Board (IRB) and the research collaborative agreement guidelines. This is a requirement mandated for this research study by our IRB and funders.

CONFLICT OF INTEREST

None.

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