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Health-related lifestyle and perceived health among people with severe mental illness: Gender differences and degree of sense of coherence.

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ABSTRACT

People with severe mental illness (SMI) experience an increased risk of physical ill health and premature death, which appears to be partly related to unhealthy lifestyle habits. The aim of this study was to describe the distribution of health-related lifestyle habits and perceived health among people with severe mental illness. A further aim was to explore if there were any gender differences or differences based on degree of sense of coherence. The study adopted a cross-sectional design based on data from 65 people with SMI. The results show that degree of Sense of Coherence (SOC) does have relevance for perceived health and for dimensions of Quality of Life (QOL). Furthermore, among the participants with strong SOC, there were less daily smokers and they seemed to have less sedentary leisure time than those with low SOC. Men reported more anxiety/depression than women and women ate fruit more often than men, otherwise there were no gender differences. In comparison with the general population, people with SMI show a higher Body Mass Index are more sedentary, more often daily smokers, have lower SOC and perceive a lower QOL. This emphasizes the importance of health-promotion support that focuses on lifestyle changes, and support for strengthening SOC and QOL for people with SMI.

Introduction

People with severe mental illness (SMI), such as schizophrenia or other long-term psychotic conditions, experience an increased risk of physical ill health and premature death, with an average life expectancy 10–25 years shorter than the general population (Laursen, Munk-Olsen, & Vestergaard, 2012). This higher risk of morbidity and mortality for people with SMI is related to the increased risk of developing metabolic syndrome (McDaid & Smyth, 2015). The prevalence of diabetes and cardiovascular diseases among people with SMI is greater than in the general population (Lahti et al., 2012; Stubbs, Vancampfort, De Hert, & Mitchell, 2015). Unhealthy lifestyle has been recognized as a predictor to many of the diseases that people all over the world die of today (World Health Organization, 2014). Unhealthy lifestyle habits such as low levels of physical activity, unhealthy diet (Malhotra, Kulhara, Chakrabarti, & Grover, 2016) and alcohol and tobacco consumption (Dickerson et al., 2016; Fusar-Poli et al., 2009) have been recognized as risk factors for developing metabolic syndrome for people with SMI. Furthermore antipsychotic medication also increases the risk of metabolic syndrome (McDaid & Smyth, 2015). Poorer access to health care has been recognized as a predictor that increases the risk of physical ill health and diseases among people with SMI (De Hert et al., 2011). Symptoms of physical illness may be misinterpreted by health care providers as symptoms of mental ill health (Happell, Ewart, Bocking, Platania-Phung, & Stanton, 2016). For example cardiovascular diseases and cancer appeared to be underdiagnosed among people with SMI (Crump, Winkleby, Sundquist, & Sundquist, 2013).

These inequalities in health and health care have been identified worldwide (World Health Organization, 2013) as well as in Sweden (Government Offices of Sweden, 2012) and the goal is that people with mental ill health must have the same access to health care as people with physical ill health. The importance of preventive interventions including risk modification and screening for people with mental ill health has been highlighted (Crump et al., 2013). For people with SMI mental symptoms may make it difficult to recognize early signs of physical ill health (Connolly & Kelly, 2005) and symptoms can be ignored (Wärdig, Bachrach-Lindström, Foldemo, Lindström, & Hultsjö, 2013) due to impaired awareness of risk factors for physical ill health (Buhagiar, Parsonage, & Osborn, 2011).This impaired awareness complicates healthy lifestyle choices and achievement of lifestyle changes (Brunero & Lamont, 2010; Hultsjö & Syren, 2013). Moreover, cognitive functional impairments may make it difficult to learn and adopt healthy behaviours (Mueser & McGurk, 2004).

In addition to the issues addressed above, socioeconomics factors

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also affect the person's prerequisites for making healthy lifestyle choices. It is well known that people with high socioeconomic status enjoy better health and live longer than people with low socioeconomic status (Siegrist & Marmot, 2006). Socioeconomic aspects do have relevance for people with SMI regarding their opportunities to live a healthy life. For example, financial resources to buy healthy food, to use transport or to take part in activities is revealed as important for being able to make healthy choices (Ewart et al., 2017).

Health can be regarded as a process through life. The ability to influence and be involved in what makes life meaningful is a prerequisite for health and occurs in interaction with the surrounding world (Parse, 1990). In the Salutogenic Theory grounded by Antonovsky (1987) health also is described as a process, a movement towards health. The main issue in this theory is not to define health but to understand what generates and maintains health. The concepts General Resistant Resources (GRR) and Sense of Coherence (SOC) are key concepts in the Salutogenic Theory. According to Antonovsky (1987) SOC consists of three dimensions; comprehensibility, manageability and meaningfulness and is a way of regarding life events as coherent, structured and meaningful. The GRR are the person's resources and can be personal, within the individual, in a group or in the society and are the prerequisites for being able to build up a strong SOC (Antonovsky, 1979).

A strong SOC has been recognized as a resource for health, especially for mental health (Eriksson & Lindström, 2006) and impacts the Quality of Life (QoL) (Eriksson & Lindström, 2007; Gupta, Agrawal, & Sharma, 2015). Wainwright et al. (2007) reported in a population-based study that women had a weaker SOC as compared to men. However both men and women with a strong SOC smoked less, were less likely to be physically inactive and ate healthier than the ones with a low SOC. Nilsen, Bakke, Rohde, and Gallefoss (2015) emphasize that a high SOC can facilitate lifestyle changes for people with diabetes regardless of gender. For people with SMI, a strong SOC has also been reported as positively associated with health-related factors such as QOL, general and mental health, well-being and functioning and men have reported a stronger SOC than women (Bengtsson-Tops & Hansson, 2001).

Several lifestyle habits have been recognized as relevant for impaired physical health among people with SMI. People with SMI tend to be daily smokers more often than the general population (Fusar-Poli et al., 2009; Lassenius, Åkerlind, Wiklund-Gustin, Arman, & Söderlund, 2013) and are less physical active along with eating a poor diet (Buhagiar et al., 2011; Lassenius et al., 2013; Osborn, Nazareth, & King, 2007). Sedentary behaviour is more common than within the general population (Stubbs, Williams, Gaughran, & Craig, 2016) and is relevant to overweight and obesity among people with SMI (Vancampfort, Probst, Knapen, Carraro, & De Hert, 2012). Studies that reports Body Mass Index (BMI) among people with SMI show that many suffer from obesity or severe obesity (Lassenius et al., 2013; Vancampfort et al., 2012).

In order to be able to promote health and prevent ill health for people with SMI based on their needs, it is important for mental health nurses to possess knowledge about how different lifestyle factors are distributed and if they differ between genders. Furthermore, although the association between self-rated health, lifestyle and SOC is revealed in several studies, only a few studies focused on the association between health and SOC and none of them focused on the association between lifestyle habits, health and SOC among people with SMI. Consequently, the aim of this study was to describe the distribution of health-related lifestyle factors and perceived health among people with severe mental illness. A further aim was to explore if there were any gender differences and differences based on degree of sense of coherence.

Methods

Design

This study has a cross-sectional design and was conducted in two different regions in southern Sweden. The study is a part of a larger project which is based on a person-centered lifestyle intervention for people diagnosed with schizophrenia. The focus of the intervention was lifestyle factors such as physical activity and, diet as well as alcohol and tobacco consumption. Result based on data from this project has previous been presented by Blomqvist, Ivarsson, Carlsson, Sandgren, and Jormfeldt (2018). Together with this study, it is the first result from the project that has been published. Studies that describe the outcomes from the intervention are in progress.

Participants

The sample consisted of patients from four psychiatric outpatient clinics in two different regions in southern Sweden. Inclusion criteria for participation in the study were that the patient should be between 18 and 65 years of age, diagnosed with schizophrenia or other psychotic disorder (American Psychiatric Association, 2013) and have established contact with one of the outpatient clinics. The patients who met these inclusion criteria were informed about the study when they came to an appointment at the outpatient clinic. The patient was invited to participate and was given oral and written information by their contact nurse at the outpatient clinic. Written informed consent was obtained from the patients who agreed to participate in the study. Of 310 people who fulfilled the criteria for inclusion, 81 gave their consent to participate in the study and 229 declined. The most common reason for not wanting to participate was given as; it did not feel important or interesting, there was no wish for any lifestyle changes, worsened ill-health, too many questions in the surveys or lack of time. Of the 81 people who gave consent, 16 did not participate in the survey (eight women and eight men aged between 27 and 67 years old).

Finally, a total of 65 (N = 65) people aged between 25 and 74 years old (m = 47.5) were included in this study. Three of them were over 65 years of age but wished to participate, met the other inclusion criteria and were therefore included. More information about the participants is presented in Table 1.

Data collection

Data was collected between March 2013 and January 2015 and only data from the baseline survey was used. Questions from Sweden's national public health survey, “Health on equal terms” (Public Health Agency of Sweden) were used to assess physical activity, diet, alcohol and tobacco consumption and to obtain sociodemographic information. The items regarding physical activity were derived from the

Table 1
Sociodemographic of participants (N = 65).

Variable	n (%)
Gender	
Male	39 (60)
Female	26 (40)
Living alone*	45 (70)
Have children*	26 (41)
Education	
Primary school	14 (22)
High school	30 (46)
University	21 (32)
Supply*	
Salary	9 (14)
Subsidy	55 (86)

* n = 64.

Table 2
Distribution of age, year in psychiatric care, BMI, EQVAS and SOC within gender (N = 65).

Variable	Men		Women					
	M	SD	M	SD	*df*	*t*	*p*	Cohen's *d*
Age	45.44	8.61	50.46	11.63	63	−2.00	0.050	0.49
Year in psychiatric care (n = 63)	19.18	9.38	19.76	12.25	61	−0.21	0.834	0.05
BMI	30.86	4.98	33.07	6.89	63	−1.50	0.138	0.37
EQVAS (n = 63)	64.16	20.57	66.36	18.12	61	−0.44	0.665	0.11
SOC (n = 62)	62.08	14.05	59.13	15.46	60	0.78	0.441	0.20

$p < 0.05$.

International Physical Activity Questionnaire modified by Public Health Agency of Sweden and were measured in intensity using a four-point scale from “sedentary leisure time” (1) to “regular exercise” (4) and in frequency using a five-point scale from “at least 5h/week” (1) to “not at all” (5). Questions about diet concerned how often vegetables and fruit were eaten using a seven-point scale from “three times a day or more often” (1) to “a few times a month or never” (7). The question about alcohol consumption, deriving from Alcohol Use Disorder Identification Test (AUDIT) (World Health Organization, 2001) referred to how often alcohol had been drunk the past twelve months using a five-point scale from “four times a week or more”(1) to “never”(5). Tobacco consumption was measured by the question “do you smoke daily?” with response alternatives yes or no. Weight and height were measured to calculate Body Mass Index (BMI). BMI over 25 is defined as overweight, over 30 as obesity and over 35 severe obesity (World Health Organization, 2018).

EuroQol Quality of Life scale (EQ-5D), five dimensions and the scale for perceived general health (EQVAS) (The EuroQOL Group, 1990) were used to assess aspects of health. The five dimensions in EQ-5D are mobility, self-care, usual activities, pain/discomfort and anxiety/depression and each dimension has three levels rated as; no problems (1), some problems (2) and extreme problems (3). The EQVAS measurement of the perception of current health uses a scale from “the worst imaginable health state” (1) to the “best imaginable health state (100). The EQ-5D is validated for measurement of health-related quality of life among people with schizophrenia (König, Roick, & Angermeyer, 2007).

Antonovsky's life-orientated questionnaire was used to measure SOC (Antonovsky, 1987) which is relevant to people's experience of their health. In this study, the Swedish SOC13 was used which consists of 13 questions comprising the three components, comprehensibility (5 items), manageability (4 items) and meaningfulness (4 items). The questions are measured on a seven-point Likert scale, from range low (1) to high (7). The range of the total score is 13–91 where a higher score indicates a stronger SOC. The SOC scale is a validated questionnaire (Eriksson & Lindstrom, 2005) and has also been validated as a measurement for people with schizophrenia (Bengtsson-Tops & Hansson, 2001).

The questionnaires were distributed to the participants by their contact nurse at the psychiatric outpatient clinic. If necessary, the participants were offered support with filling in the questionnaire either from the contact nurse or from the contact person from the housing support team. The questionnaire was collected at the psychiatric outpatient clinic when the participant had their next appointment. Weight and height were measured at the psychiatric outpatient clinic and were taken from the electronic patient records.

Some of the categorical variables have been dichotomized before analysis due to the small sample size. The EQ5D levels were dichotomized into “no problems” (level 1) and “problems” (level 2 and 3) (EuroQoL, 2015). The variable for measuring intensity of physical activity was dichotomized to “sedentary leisure time” (level 1) and “exercising leisure time (level 2, 3 and 4) and the variable for measuring frequency of physical activity was dichotomized from a five-point scale to a three-point scale and the variables that measured dietary habits was dichotomized from a 7-point scale to a 3-point scale. For comparison between low and high SOC, a cut-off was made at the median. Other studies have used the median as cut off (Johansson Hanse & Engstrom, 1999; Ochiai, Daitou, & Aoki, 2012; Olsson & Hwang, 2002) which can be suitable when only a small sample is available.

Analysis

Descriptive and comparative statistics have been used for the analysis and are described as mean, frequencies and percent. In order to be able to explore if there were any significant differences between men and women and between low and high SOC independent-samples, *t*-test was used to compare means on the continuous variables and Chi-Square Test for independence alternative Fisher's Exact Test was used to make comparisons of the categorical variables. A *p*-value at ≤ 0.05 was considered to be significant. For calculating the effect size Cohen's d was used for the *t*-test and Phi coefficient alternative Cramer's V was used for the Chi-Square Test. IBM SPSS statistics version 21 were used for the analysis (IBM Corp, 2012).

Ethical considerations

The study has been conducted in accordance with ethical standards (World Medical Association Declaration of Helsinki, 2015) and was approved by the Regional Ethics Committee at Lund University, Sweden (Dnr 2012/267). The participants received written and oral information about the study and gave their written consent to participate.

Findings

As shown in Table 2, there were no significant differences in the study sample between men and women in age, although women generally were a little older. Both men and women reported almost 20 years in psychiatric care. Neither was there a significant difference when comparing age and time in psychiatric care between low and high SOC (Table 3). The participants had a mean BMI of 31.7 (SD 5.87) and 92% had a BMI in excess of 25 which indicates overweight, obesity or

Table 3
Distribution of age, year in psychiatric care, BMI and EQVAS based on degree of SOC (n = 62).

Variable	Low SOC		High SOC					
	M	SD	M	SD	*df*	*t*	*p*	Cohen's *d*
Age	47.19	10.11	48.52	10.38	60	−0.51	0.613	0.13
Year in psychiatric care (*n* = 60)	21.47	11.57	17.83	9.57	58	1.33	0.190	0.34
BMI	32.31	7.02	31.64	4.57	60	0.44	0.659	0.11
EQVAS (n = 60)	57.48	19.20	72.42	17.89	58	−3.12	0.003	0.81

$p < 0.05$.

Table 4
Distribution of physical activity, consumption of vegetables and fruit, alcohol and tobacco and QOL within gender. (N = 65).

Variable	Men		Women					
	n	%	*n*	%	Chi^2	*p*[a]	*df*	ES[b]
Sedentary leisure time	12	30.8	5	19.2	n/a	0.392	1	−0.13
Frequency of physical activity								
1 h/week or less	12	30.8	8	30.8	0.00	1.000	2	0.00
> 1 h/week but < 5 h/week	21	53.8	14	53.8				
5 h/week or more	6	15.4	4	15.4				
Consumption of vegetables								
< 1 time/week	3	7.7	1	3.8	0.84	0.658	2	0.11
At least 1 time/week	16	41.0	9	34.6				
At least 1 time/day	20	51.3	16	61.5				
Consumption of fruit								
< 1 time/week	9	23.1	1	3.8	6.14	0.046	2	0.31
At least 1 time/week	16	41.0	9	34.6				
At least 1 time/day	14	35.9	16	61.5				
Alcohol consumption								
2–3 times/week	6	15.4	2	7.7	3.38	0.336	3	0.23
2–4 times/month	13	33.3	5	19.2				
1 time/month or less	9	23.1	7	26.9				
Never	11	28.2	12	46.2				
Daily smoking	12	30.8	4	15.4	n/a	0.241	1	0.18
EQ-5D (reported problems)								
Mobility	2	5.1	4	15.4	n/a	0.207	1	0.17
Self-care	2	5.1	4	15.4	n/a	0.207	1	0.17
Usual activities	16	41.0	9	34.6	n/a	0.795	1	−0.07
Pain/discomfort	21	55.3	16	61.5	n/a	0.797	1	0.06
Anxiety/depression	28	73.7	12	46.2	n/a	0.036	1	−0.28

$p < 0.05$.
n/a = not available for Fisher's Exact Test.
[a] Pearson Chi-square is used for the ordinal variable and Fisher's Exact Test is used for the nominal variable.
[b] Effect size (ES) is given with Cramer's V for the ordinal variable and Phi coefficient for the nominal variable.

Table 5
Distribution of physical activity, consumption of vegetables and fruit, alcohol and tobacco and QOL based on the degree of SOC (n = 62).

Variable	Low SOC		High SOC					
	n	%	*n*	%	Chi^2	*p*[a]	*df*	ES[b]
Sedentary leisure time	11	35.5	4	12.9	n/a	0.073	1	−0.26
Frequency of physical activity								
1 h/week or less	11	35.5	7	22.6	1.41	0.495	2	0.15
> 1 h/week but < 5 h/week	16	51.6	18	58.1				
5 h/week or more	4	12.9	6	19.4				
Consumption of vegetables								
< 1 time/week	4	12.9	0	0.0	4.30	0.116	2	0.26
At least 1 time/week	11	35.5	12	38.7				
At least 1 time/day	16	51.6	19	61.3				
Consumption of fruit								
< 1 time/week	6	19.4	3	9.7	1.31	0.519	2	0.15
At least 1 time/week	12	38.7	12	38.7				
At least 1 time/day	13	41.9	16	51.6				
Alcohol consumption								
2–3 times/week	3	9.7	5	16.1	1.82	0.610	3	0.17
2–4 times/month	7	22.6	10	32.3				
1 time/month or less	8	25.8	7	22.6				
Never	13	41.9	9	29.0				
Daily smoking	12	38.7	4	12.9	n/a	0.040	1	0.30
EQ-5D (reported problem)								
Mobility	6	19.4	0	0.0	n/a	0.024	1	−0.33
Self-care	5	16.1	0	0.0	n/a	0.053	1	0.30
Usual activities	18	58.1	5	16.1	n/a	0.001	1	−0.43
Pain/discomfort[c]	19	63.3	16	51.6	n/a	0.440	1	−0.12
Anxiety/depression[c]	27	90.0	11	35.5	n/a	0.000	1	−0.56

$p < 0.05$.
n/a = not available for Fisher's Exact Test.
[a] Pearson Chi-square is used for the ordinal variable and Fisher's Exact Test is used for the nominal variable.
[b] Effect size (ES) is given with Cramer's V for the ordinal variable and Phi coefficient for the nominal variable.
[c] $n = 61$.

severe obesity with no significant differences between men and women (Table 2) or between low and high SOC (Table 3).

In the study sample, the perceived general health (EQVAS) showed a mean of 65 (SD 19.52) and the mean score for total SOC was 60.9 (SD 14.55) with no significant differences in gender (Table 2). However, there were significant differences in perceived general health when comparing low and high SOC scores. The participants with weak SOC perceived their general health as lower than those with strong SOC, with a large effect on the differences between the groups (Table 3). Within the EQ-5D dimensions, the participants reported experiencing problems in usual activities (39%) with pain/discomfort (58%) and problems with anxiety or depression (63%). There was a moderate association between anxiety/depression and gender in which men reported significant more anxiety/depression as compared to women (Table 4). Furthermore there was a moderate association between mobility and degree of SOC and a strong association between usual activities and anxiety/depression and degree of SOC. The participants with strong SOC reported less problems in mobility, usual activities and anxiety/depression than those with weak SOC and the differences were significant (Table 5).

More than one fourth of the participants (26.2%) reported a sedentary leisure time and men were slightly more sedentary than women. However, there were no significant difference between men and women, nor were there in frequency of physical activity (Table 4). More than half of the participants reported eating vegetables (55%) and almost half (46%) reported eating fruit, at least once a day. Women ate significantly more fruit with a moderate effect on the difference (Table 4). Sixty percent reported drinking alcohol once per month or less during the latest 12 months and, of them, more than half (35.4%) reported not using alcohol at all. One quarter (24.6%) of the participants were daily smokers. Men used more alcohol and were more often daily smokers than women but there were no significant differences (Table 4). When comparing lifestyle habit between persons with low and high SOC score there were no significant differences except for daily smoking. There was a moderate association between daily smoking and degree of SOC where persons with weak SOC tended to be daily smokers more often than those with strong SOC (Table 5). Although the other lifestyle habits showed no significant association, there were some differences worth mentioning. The persons with stronger SOC were less sedentary and slightly more physically active and ate more fruit and vegetables than those with weaker SOC and those with high SOC scores reported drinking alcohol more often than those with low SOC scores (Table 5).

Discussion

High BMI is a risk factor for metabolic syndrome which can lead to several diseases (Institute for Health Metrics and Evaluation, 2016). In the study sample, 92% were overweight, obese or severely obese compared with 51% of the general population in Sweden (Public Health Agency of Sweden, 2016). High BMI levels among people with SMI has been reported previously both in Sweden (Lassenius et al., 2013) and internationally (Heald et al., 2017; Janney et al., 2013). Blomqvist et al. (2018) reports high prevalence of obesity and high risk for cardiovascular diseases among people with SMI. This is serious and shows that health-promotion interventions and support focusing on weight loss should be an important issue for nurses in psychiatric care in order to

prevent physical diseases. Skär, Juuso, and Söderberg (2014) find in their study among people with obesity that women had a higher BMI than men and that BMI was associated with SOC. This contradicts the results of this study in which BMI did not differ between genders and did not seem to be associated with degree of SOC, which was a little surprising. However similar results are also reported in other studies where no association between SOC and BMI could be found (Sardeli, Merakou, Markaki, & Barbouni, 2017; von Lengerke, Janssen, & John, 2007). This may be due to a ceiling effect since many of the participants reported extremely high BMI. Another explanation may be the fact that SOC has been found to be strongly associated with mental health, while its relationship with physical health is weaker (Eriksson & Lindström, 2006).

In the study sample the mean SOC was 60.9 compared to 70 in the general population in Sweden (Lindmark, Stenstrom, Gerdin, & Hugoson, 2010) and 52.8–57.2 among people with SMI (Forsberg, Björkman, Sandman, & Sandlund, 2010). In comparison, people with physical diseases such as diabetes report SOC scores at 63.4 (Nilsen et al., 2015). Some studies report weaker SOC among women compared to men (Skär et al., 2014; Wainwright et al., 2007) while some studies report no difference (Eriksson, Lindström, & Lilja, 2007; Lindmark et al., 2010) which is consistent with this study where no gender differences were found. Altogether this indicates that SOC among people with SMI is lower than among the general population, however it appears to be only a minor difference as compared to people with physical ill health.

It is known that perceived good health may be associated with a strong SOC (Eriksson & Lindström, 2006) and this is also consistent with the result from this study where people with high SOC perceived their general health better than those with low SOC. This finding is in line with Antonovsky's Salutogenic Theory that health can be regarded as a process through life and that people with strong SOC can reinforce and improve their health (Antonovsky, 1987). Furthermore, previous research has confirmed that SOC is important for QOL, people with a strong SOC report better QOL (Eriksson & Lindström, 2007) and this is also been shown among people with SMI (Bengtsson-Tops & Hansson, 2001) which is consistent with findings from this study. The persons with weak SOC reported having more problems with mobility, usual activities and anxiety/depression than those with strong SOC. Men reported more problems with anxiety/depression than women. Compared to the general population in Sweden, people with SMI have reported much more problem in usual activities and anxiety/depression (Burström et al., 2014; Döring, de Munter, & Rasmussen, 2015). This highlights the need for a holistic and salutogenic approach when managing health and lifestyle changes among people with SMI.

More than one fourth of the participants in this study reported sedentary leisure time which is higher compared to the general population where approximately 10% report this situation (Södergren, Sundquist, Johansson, & Sundquist, 2008). Among people with severe mental illness who reported sedentary leisure time, the number various from 30% (Lassenius et al., 2013) to 41% (Eskelinen, Sailas, Joutsenniemi, Holi, & Suvisaari, 2015). Sedentary leisure time and physical activity are reported with various results which may be due to that they are defined and measured in different ways. However, the fact that sedentary leisure time rates are higher among people with SMI than among the general population together with the knowledge that people with SMI also have much higher BMI, emphasizes the fact that this is an important issue for mental health nursing that needs to be addressed. There appears to be differences in sedentary leisure time between people with strong SOC compared to those with weak SOC, although there were no significant differences. Furthermore, it is reported that a strong SOC can facilitate physical activity and protect against sedentary leisure time among the general population (Wainwright et al., 2007) and it can be assumed that there is no difference among people with SMI.

One surprising result of this study was that the participants reported drinking less alcohol than the general population. More than one third of the participants in this study reported drinking no alcohol at all the last year compared to 15% in the general population in Sweden (Public Health Agency of Sweden, 2016). Perhaps the reason for this could be explained by the long period of time that many of the participants have been in psychiatric care and that the mean age of the participants was rather high. There might have been a different result with a younger sample who have not yet identified strategies for managing symptoms of mental ill health. Daily smoking on the other hand was reported at high rates in this study as compared to the general population in Sweden. One out of ten smoked on a daily basis among the general population (Public Health Agency of Sweden, 2016) compared to one fourth in the study sample. However, the participants in this study reported smoking less than is reported from other studies where half (Lassenius et al., 2013) or as much as two thirds (Heald et al., 2017) of the persons with SMI were daily smokers. People with weak SOC tend to be daily smokers more often than people with strong SOC in the study sample which is consistent with findings from the general population (Wainwright et al., 2007).

It is recommended by World Health Organization (2015) to eat fruit and vegetables five times a day to prevent noncommunicable diseases. The participants in this study do not eat that amount of fruit and vegetables but then neither do the general population (Public Health Agency of Sweden, 2016; World Health Organization, 2014) so this appears to be a problem among the entire population rather than a specific problem for people with SMI.

The most important findings from this study emphasize that there appears to be a higher rate of smoking, poor diet and sedentary leisure time together with high BMI among the participants. One way of explaining this could be that people with SMI do not have the strength or the required support to deal with their physical ill health and instead prioritize their mental health, or that their awareness of risk factors for physical ill health is poor (Buhagiar et al., 2011). Heald et al. (2017) and Lundström, Ahlström, Jormfeldt, Eriksson, and Skärsäter (2017) on the other hand highlight that people with SMI appear to have insight into their unhealthy lifestyle and an awareness of their life situation and thus indicate the potential for health-promotion interventions. The degree of SOC appears to exert the greatest impact on smoking and QOL, which emphasizes the need for strengthening the SOC in order to improve the overall health of people with SMI. However this raises questions about how this is to be done and what kind of challenges that people with SMI can face in their daily lives when lifestyle changes are to be made.

Methodological considerations

There are limitations in this study that need to be addressed. One limitation is small sample size. One problem due to this was that several of the variables had to be dichotomized in order to be able to carry out statistical analysis, which brings the risk of losing variation. Another problem with the sample in this study is that there might have been the people with good cognitive conditions and high motivation for lifestyle changes who participated, while those with the greatest need for support may have declined to participate. They perhaps did not even receive the invitation to participate due to their mental ill health as health professionals sometimes have a gatekeeping function (Bucci et al., 2015). There was also an internal dropout rate both in terms of not filling in the questionnaire at all or missing some of the questions. The reason for the internal dropout rate is unclear but could be due to the large number of questionnaires that was used in the larger project. However, high dropout and low response rates are common in research involving people with mental illness (Patterson, Kramo, Soteriou, & Crawford, 2010; Schwarz, 1999). Nevertheless, it is important to involve people with SMI in research despite these difficulties. Indeed, the fact that there often are high dropout rates, which may lead to smaller sample sizes, further strengthens the need for more studies that

together can contribute to knowledge about the situation for people with SMI.

The median as a cut-off for low and high SOC in this specific sample could be misleading due to the fact that high SOC among people with SMI might not be especially high when compared to the general population and it is important to be aware of this when interpreting the result. Another limitation is that some of the questions have been answered by the participants using a large range, for example SOC and EQVAS. The decision was made not to remove these outliers from the analysis, however this might have affected the results but the fact that there were large differences in perceptions among people with SMI can be regarded as a result in itself. This study was based almost entirely on self-reported measurements which could have influenced the validity of the study due to individual perceptions of questions. However, the aim was to examine self-reported lifestyle and perceived health, so the data presented in this study is how the participants reported it to be. Despite the limitations addressed above, the results may contribute to increased knowledge about lifestyle and health among people with SMI and how it is distributed regarding gender and degree of SOC, knowledge that is important for mental health nurses when supporting lifestyle changes.

Conclusion

In conclusion this cross-sectional study shows that SOC is relevant to perceived health and QOL among people with SMI. However, among the lifestyle habits, only smoking appears to show a statistical association with SOC, even if sedentary leisure time also seem to be affected by degree of SOC. The persons in this study who had a strong SOC perceived their health and QOL to be better, smoked less and were less sedentary than those with weak SOC. There were, however, no statistical differences in lifestyle habits, perceived health and QOL between genders, except for eating fruit and anxiety/depression, among people with SMI. Furthermore, people with SMI appear to have much higher BMI, more sedentary leisure time, are more often daily smokers, have a weaker SOC and worse QOL compared to the general population. These results emphasize the importance of health-promotion support that focuses on lifestyle changes and support to strengthen SOC and QOL among people with SMI.

Implications for nursing

Increased knowledge about health-related lifestyle and perceived health is a prerequisite for raising the awareness in mental health care about the importance of support that can enhance the physical health of people with SMI. With a holistic view on health and lifestyle, physical health should have the same importance as mental health in mental health nursing. The physical health affects the mental health and vice versa and consequently it is vital to implement support for lifestyle changes that focus on all aspect of health in order to promote physical health and prevent physical ill health among people with SMI. Further research is needed that addresses health-related lifestyle and lifestyle changes among people with SMI. Furthermore, health-promotion interventions that involve and support people with SMI when managing lifestyle changes should be implemented and evaluated.

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Conflict of interest declaration

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this paper.

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