

Relationship Between Sense of Coherence and Social Support and Psychological Well-being Among Patients with Schizophrenia

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Abstract

Background: Schizophrenia is a chronic, persistent, frequently recurrent psychiatric condition that affects early brain development with a heterogeneous genetic and neurobiological history and is expressed as a mixture of psychotic symptoms such as hallucination, delusion, disorganization, and motivational and cognitive dysfunctions. **The aim** of this study Having a sense of coherence (SOC) and good social support is important for psychological well-being. This study aimed to investigate the nature of SOC and social support and their relationship with psychological well-being among patients with schizophrenia. **Methodology:** A descriptive cross-sectional research design was used to assess a convenience sample of 148 schizophrenia patients from Zagazig University Hospital. Data were collected using a questionnaire consisting of a sociodemographic datasheet, medical datasheet, SOC scale, multidimensional social support scale, and general health questionnaire (GHQ-12). **Results:** Significant relationships were found between some medical data and SOC and between social support and psychological well-being. The mean scores for SOC and social support were significantly correlated positively with the GHQ result. **Conclusion:** The highest percentage of SOC was reported on the comprehensibility subscale, social support was mainly received from others, and low psychological well-being was found to exist particularly for the positive statements. SOC and social support were significant positive predictors of GHQ results. **Recommendation:** endorsing the application of intervention programs for patients with schizophrenia that enhance SOC to improve their psychological well-being and recovery from disease.

Keywords: Psychiatry, psychology, schizophrenia, sense of coherence, social support, well-being.

Introduction

Globally, up to one out of 100 people will experience schizophrenia. Schizophrenia is a chronic, persistent, frequently recurrent psychiatric condition that affects early brain development with

a heterogeneous genetic and neurobiological history and is expressed as a mixture of psychotic symptoms such as hallucination, delusion, disorganization, and motivational and cognitive dysfunctions (Kahn et al., 2015). A high

proportion of patients experience a relapse following improvement and remission (Goff et al., 2017), which results in the onset of serious symptoms, including psychosocial and occupational failure (Pillai et al., 2018).

Earlier research has shown that schizophrenia is marked by frequent psychotic recurrence, which, in turn, contributes to frequent hospitalization. Beginning one year after hospitalization, up to 40% of schizophrenia patients may experience relapse, creating a severe human and economic burden (Ayano & Duko, 2017). Meanwhile, within five years of the first schizophrenic episode, more than 80% of individuals with schizophrenia experience relapsed psychotic symptoms, leading to more illness and, therefore, significant economic strain due to significant medical costs and decreased productivity (Chi et al., 2016).

High levels of stress associated with disease relapse, the build-up of psychopathological symptoms, and the need for more hospitalization may be experienced by a person with schizophrenia spectrum disorders. According to the creator of salutogenesis (from Latin, *salus* = health and *genesis* =

origins), a stronger sense of coherence (SOC) protects people from the emergence of illnesses and, if any do arise, helps to speed up the individual's health recovery. The recovery process in schizophrenia is a concentration of the condition as a certain form of the continuation phase of the disease (Bronowski et al., 2016).

In the salutogenic approach, health may be understood as a scale between two ends that correspond to the states of total wellness and total disease as proposed by Aaron Antonovsky, who recommended that the degree of SOC in life influences a person's position on this scale (Flensburg-Madsen et al., 2005). SOC as a concept refers to an internal source that helps people to cope with stressful circumstances because of the health-promoting orientation of a constant sense of trust that events are predictable and that things will happen as planned. In terms of three areas, this capacity to handle stress can also be described as comprehensibility, manageability, and meaningfulness (Mahammadzadeh et al., 2010). Of these, comprehensibility is the degree to which the environment is meant to be logical, consistent, and structured; manageability is how much one can cope with stressors and fulfill the requirements

due to the availability of resources; and meaningfulness is the degree to which a person believes that life has goals and views demands as obstacles that deserve effort and dedication (Antonovsky, 1979).

The extent of SOC that a person maintains is correlated with the following four types of life experiences: continuity (in the course of growing up, there is consistent order and stability instead of a chaotic environment), load balance (the balance between the demands of others and one's resources), involvement in shaping outcomes (the degree of autonomy to determine one's destiny), and emotional closeness (Antonovsky, 1990; Sagy & Antonovsky, 2000). These life experiences are influenced by "generalized resistance tools," which are the physical, emotional, cognitive, or relational characteristics of a person, family, or the society that make it possible to cope effectively with stressors (Antonovsky, 1987). Examples of generic resistance resources include, but are not limited to, material resources (e.g., money), world awareness and skills development, social support, ego identification, faith, cultural stability, and the mental status of the person (Antonovsky, 1979, 1987). The salutogenic health system highlights a

two-way relationship between generalized resistance tools and SOC, in which the former are key elements for improving the latter and the latter is important for mobilizing the former to promote successful coping in stressful circumstances (Mittelmark & Bauer, 2017).

Salutogenesis focuses on health-promotion approaches and encourages the creation of resources among individuals to preserve their health, facilitate recovery, or delay disease progression (Antonovsky, 1987). Currently, the use of salutogenesis in general health care settings ranges from the establishment of health-promoting hospitals and improvements in esthetic design in health care settings to patient empowerment (e.g., informed consent, collaborative decision-making, and the promotion of health literacy) and the training of health care practitioners to encourage and support health-promoting processes (Mittelmark et al., 2017).

The SOC among persons with mental illnesses has previously been examined in the literature. Study findings indicate that SOC is a good indicator of the quality of life in patients treated for schizophrenia (Badura-Brzoza et al.,

2012; Gassmann et al., 2013). A trend towards a higher performance relationship between SOC and lower Positive and Negative Syndrome Scale (PANSS) results was also noted (Gassmann et al., 2013). Similarly, previous data from a community of Swedish patients diagnosed with schizophrenia or schizoaffective disorder revealed a negative association between SOC and the severity of psychopathological symptoms (Bengtsson-Tops et al., 2005).

Norwegian researchers Langeland et al. (2006) have reiterated the relevance of counseling in the rehabilitation phase of people with all kinds of mental illnesses based on the principle of salutogenesis. In coping with mental health problems, the focus was put on the enhancement of services. In this respect, Griffiths et al. (2011) conducted an interesting study that was carried out using a qualitative approach to the theory of salutogenesis (i.e., without using the Orientation to Life Questionnaire). According to these researchers, the intensity of the SOC in the community of people with mental disorders may suggest a person's general adaptability, yet this is not always an effective measure in

dealing with particular everyday problems.

Social support, especially originating from the family, is crucial for helping both healthy people and psychiatric patients—including patients with schizophrenia—to develop psychological well-being (Corrigan, 2003; Hayes, 2014). Sadly, patients with mental disorders such as schizophrenics often feel socially isolated due to inadequate family support (Brunt & Hansson, 2002). Moreover, receiving sufficient social support is a significant driver of the quality of life of people with schizophrenia since it increases their ability to manage stress and tension, leading to reduced symptoms and the probability of hospitalization, thus improving life (Guedes de Pinho et al., 2018). Generally, patients with a mental disorder have a lower quality of life than the general population, especially when considering the psychological welfare as an indicator of an individual's mental health status, owing to restrictions placed by economic, clinical, and sociodemographic factors (Makara-Studzinska et al., 2011).

Mental state reinforcement and support are crucially beneficial to keeping the

psychological well-being in a steady state during individuals' mental recovery (Latipun et al., 2019). Several previous studies have reported the positive correlation that exists between the level of SOC and degree of social support, particularly family support, received (Heiman, 2004; Skärsäter et al., 2005). Increased SOC reduces anxiety, dysfunctional thoughts, struggles with others, and psychosocial confusion, even in the face of disabilities or life difficulties. Along these lines, Yadav (2010) confirmed that patients with a mental disorder receiving insufficient support from their direct caregivers have no positive activities, which reduce their well-being and quality of life.

Significance of the study

Undoubtedly, a person suffering from schizophrenia spectrum disorders may experience high levels of stress associated with relapse of illness, the build-up of psychopathological symptoms, and the need for further hospitalization. A higher SOC, obtained social support protects people from the onset of disorders and, if they emerge, aids in accelerating the recovery of health. It is

therefore important to conduct this study to investigate the relation of SOC and social support with psychological well-being among patients with schizophrenia.

Aim of the study

This research was planned to investigate the relation of SOC and social support with psychological well-being among patients with schizophrenia.

Research questions

1. Does the SOC relate to psychological well-being among patients with schizophrenia?
2. Does social support relate to psychological well-being among patients with schizophrenia?

Subjects and Method

Research Design

A descriptive cross-sectional design was employed.

Setting

The study participants were selected from the outpatient clinic of Zagazig University Hospital, which

provides care for acute and chronically mentally-ill patients. This care is provided for children, adults, and geriatric patients by a multidisciplinary team of psychiatrists and nurses; the privacy of patients is well-maintained. The setting of the study was chosen for the study investigators' convenience.

Sample Size

The study target population included schizophrenia patients from the outpatient clinics at Zagazig University Hospital as a place of work of the study investigators. The study population sample was selected over three months (June–August 2020). The total number of patients who attended the outpatient clinics at Zagazig University Hospital during this period was 241 patients and a portion of them ($n = 148$ patients) were selected using the Steven Thompson equation, which follows.

$$n = \frac{N \times p(1 - p)}{[N - 1 \times (d^2 \div z^2)] + p(1 - p)}$$

Where N is the population size; n is the sample size required; z is the standard score corresponding to the level of 0.95, which is 1.96; d is the error ratio equal to 0.05; p is the ratio of the availability of

the property equal to 0.5 and 0; and q is the residual ratio.

Inclusion criteria

Patients older than 18 years with a medical diagnosis of schizophrenia with a relatively chronic and stable mental state that enabled their reliable completion of a set of questionnaires and who could read and write were included.

Exclusion criteria

Patients with an acute state of schizophrenia or who were younger than 18 years old were excluded as these individuals were believed to be unable to comprehend and complete the questionnaire due to the instability of their mental status. Patients with a diagnosis other than schizophrenia or with a co-existing addiction to psychoactive substances or other mental disorders were also excluded.

Tools of Data Collection

The study investigator used a self-administered questionnaire form divided into four sections:

The first section covered the personal characteristics of the study participants, including age, sex, marital

status, number of children, level of education, place of residence, job, monthly income, and family history of psychiatric illness. This questionnaire also included a medical datasheet that requested information such as the onset of the disease, age at diagnosis, treatment onset and therapeutic modality, compliance with treatment, number of past hospitalizations, history of relapses, and duration of illness.

The second section included the SOC scale and was measured with a modified version of the SOC-13 self-report questionnaire, which was previously deployed among patients in acute psychiatric units in Norway and found to be easier for patients with severe psychiatric problems to understand (Gråwe et al., 2006; Svendsen et al., 2020). The modified questionnaire asks the same questions as the original version (Antonovsky, 1987), but includes predefined answers on a five-point scale (1=always, 5 = never) instead of using the original seven-point Likert scale (1–7 points). Using a five-point Likert scale can make decision-making easier for patients with schizophrenia as the levels of the seven measurement questions may be more difficult to differentiate from one another.

Also, the researchers of the current study performed some segmentation of question no. 5 in the “comprehensibility” category by dividing the question into three questions. Also, question no 3 in the “meaningfulness” category was divided into two questions. Studies of the psychometric properties of the SOC-13 scale have reported high levels of validity and reliability (Eriksson & Lindström, 2005).

The reliability of the instrument has been investigated mostly in terms of internal consistency. Cronbach’s alpha has been reported to range between 0.79 and 0.95 for the 29-item version and between 0.74 and 0.91 for the 13-item version (Antonovsky, 1993; Langius et al., 1992; Söderhamn & Holmgren, 2004). Also, the SOC responses for question no. 5 in the “comprehensibility” category and those of question no. 3 in the “meaningfulness” category were reversed positively during scoring, with total scores ranging from 16 to 80 points and a higher score indicating stronger SOC. The maximum scores for the different core components of the SOC are as follows: 35 points in the comprehensibility category, 20 points in the manageability category, and 25 points in the meaningfulness category.

The third section involved the multidimensional social support scale (MSPSS), which consists of 12 items with three subscales, to determine the level of support received from family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant others (items 1, 2, 5 and 10) (Zimet et al., 1988). The modified questionnaire again asks the same questions as the original version but includes predefined answers on a five-point scale (1 = very strongly disagree, 5 = very strongly agree) instead of the original seven-point Likert scale to make it easier for patients with schizophrenia to respond. Higher scores indicate greater perceived social support. A previous study measuring reliability using Cronbach's alpha reported values of 0.92 for the family factor, 0.96 for the friends factor, 0.93 for the significant others factor, and 0.91 for the entire scale, suggesting excellent internal consistency.

The fourth section included the general health questionnaire (GHQ), validated as GHQ-12 for the Arab population (Daradkeh et al., 2001; El-Rufaie & Daradkeh, 1996). It contains an equal number of positive and negative items that are scored using a four-point Likert scale; for positive items, the four scoring options are 0 = better than usual,

1 = same as usual, 2 = worse than usual and 3 = much worse than usual, whereas, for negative items, the four options are 0 = not at all, 1 = less than usual, 2 = same as usual, and 3 = more than usual. Total scores can range from zero to 36 points. For this study, the scale was reversed to make the calculation of the scores easier and to reflect better psychological well-being; in this context, the higher the scores, the better the general health and mental well-being. The Arabic version of the GHQ-12 has proven to be reliable as indicated by a Cronbach alpha value of 0.86 (Daradkeh et al., 2001)

Validity of the tools

All scales were originally designed in the English language and were translated into simple Arabic language to be suitable for deployment among patients with schizophrenia in this study. Prior to the use of the Arabic-language versions of said tools, they were reviewed by a panel of five experts in the field of psychiatric mental health nursing to test their content and face validity, which were deemed acceptable.

Reliability of the tools

Reliability was determined using Cronbach's alpha coefficient test, test-retest, and split-half reliability coefficient, which revealed that each of the three scales (i.e., SOC, MSPSS, GHQ) consisted of relatively homogenous items as indicated by the moderate to high reliability (internal consistency) of each scale. Specifically, Cronbach's alpha and the validity values were 0.905 and 0.951 for GHQ, 0.885 and 0.941 for the SOC scale, and 0.961 and 0.980 for MSPSS.

Field of work

A pilot study was conducted before beginning the main study to test the scales' clarity and feasibility. The pilot sample involved about 10% of the patients with schizophrenia who fulfilled the set criteria for the main study. Based on the pilot results, the average time needed to carry out the interview to fill the questionnaire was calculated (25 minutes), some modifications in the phrasing of some items were made, and the findings were used to assess the reliability of the scales used as mentioned before. However, the responses of the participants in the pilot study were excluded from the main results.

Ethical Consideration

Written approval was obtained from the scientific and ethical committee of the Faculty of Nursing at Zagazig University and from concerned authorities at Zagazig University Hospital to carry out the study in the outpatient department, preserving patients' privacy and information confidentiality as the collected data were used for research only. The interviews were performed with individual patients after collecting their oral consent to participate in the study; also, a description of the nature of the study and the study procedure was explained to the selected participants prior to their enrollment. This study was voluntary to participate in and used noninvasive procedures and it was ensured that there would be no physical and psychological harm caused to the patients who participated.

Statistical Data Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences version 25.0 software program (IBM Corp, 2017).

A descriptive statistical analysis using mean, frequency, percentage, and standard deviation values was conducted

to describe the demographic variables. The mean and percentage values of the SOC, MSPSS, and GHQ items were calculated. An independent t-test was used to compare mean values between two groups of the study variables (i.e., SOC, MSPSS, and GHQ items) with the sociodemographics and medical data of patients (i.e., sex, employment, residence, the presence of children, number of children, income, past medical history, beginning of treatment, treatment type, compliance with treatment, commitment with follow-up, and having a previous relapse), while a one-way analysis of variance was used to assess differences between mean values of main variables (i.e., age, level of education, and marital status) among more than two groups.

A post-hoc test was performed after finding statistically significant differences to determine where the differences truly came from. Correlation coefficients and multiple regression analyses were used to detect independent predictors and the correlation between SOC and social support scores and psychological well-being among the study sample. A p-value was considered significant at less than 0.05.

Results

The findings of this study are illustrated in seven tables. **Table 1** reflects the sociodemographic characteristics. In this study, 148 schizophrenic patients in total were included. About two-thirds of the study sample was male (62.2%) and most were aged between 19 and 26 years (43.2%) and had secondary education (48.0%). Meanwhile, almost one-third of the sample (33.1%) had received a university education and (52.0%) were single, while nearly one-third were married (33.8). More participants were unemployed than not, residing in urban areas than in rural areas, and reported an insufficient monthly income rather than a sufficient one (73.6%, 62.2%, 59.5%, respectively). Additionally, 39.9% of patients had children, with about two-thirds reporting having only one or two children (66.10%).

Table 2 reveals that the highest percentage of the study sample had no physical disease but a family history of mental illness (73.6% and 65.5%, respectively). The mean \pm standard deviation score of the duration of illness was 4.15 ± 2.55 years and the patient's age (mean \pm standard deviation) at first diagnosis was 24.10 ± 6.60 years. Most of

the study sample had begun treatment immediately after receiving their diagnosis, were receiving pharmacological treatment only, and complied well with both treatment and follow-up (62.8%, 57.4%, 57.4%, and 60.1%, respectively). The majority of the study sample (77.7%) had experienced a previous hospitalization (mean \pm standard deviation: 2.84 ± 2.21 times), with the last hospitalization occurring about 13 months ago and lasting for an average duration of 55 days. More than half of the study participants had experienced a previous relapse (58.8%), reporting (mean \pm standard deviation) 3.07 ± 1.98 relapses.

Table 3 reveals that the highest percentage of SOC was in the comprehensibility category, then the meaningfulness category (40.75% and 39.25%, respectively), with that in both categories totaling 38.25%. Concerning multidimensional social support, the highest percentage of social support was received from others, then from family members (69.75% and 65.5%), with a total percentage of social support received of 63.5%. Finally, the study sample presented a low total percentage of psychological well-being (27.77%),

particularly in relation to positive statements (14.67%).

Table 4 reflects the existence of highly statistically significant differences in SOC, social support, and psychological well-being scales according to most of the sociodemographic characteristics ($p < 0.001$). The results showed that significantly higher mean scores for SOC, social support, and psychological well-being scales existed for university-educated participants than for others with lower educational levels. In contrast, significantly lower mean scores for SOC, social support, and psychological well-being were found among participants aged 19 to 26 years than those of other ages and among single participants as compared with among married, divorced, or widowed participants ($p < 0.001$).

Similarly, significantly higher mean scores for SOC, social support, and psychological well-being were found among employed individuals, urban residents, participants who had children, and participants with sufficient incomes relative to the other categories ($p < 0.001$).

Table 5 manifests highly statistically significant differences in SOC, social support, and psychological well-being based on some medical data ($p < 0.001$). Higher mean scores of these variables were found among participants who had begun treatment immediately after receiving their diagnosis (as compared with those who began treatment later on), those who received both pharmacological treatment and psychotherapy (as compared with pharmacological treatment only), those who complied better with the prescribed treatment regimen, those who committed to the follow-up schedule, those with no previous hospitalizations, and those who had no previous relapse history. In addition to that, there was a highly statistically significant positive correlation ($p < 0.001$) between each of the SOC, social support, psychological well-being scores and both the patient's

age at the first diagnosis and the last instance of hospitalization. On the other hand, there was a highly statistically significant negative correlation ($p < 0.001$) between each of the SOC, social support, and psychological well-being scores and the duration of illness, number of previous hospitalizations, time spent in the hospital (in days), and number of previous relapses.

Table 6 reveals a highly statistically significant positive correlation exists between the three variables of SOC, social support, and psychological well-being ($p < 0.001$).

Finally, **Table 7** reveals that both the SOC scale and the level of perceived social support can be considered significant positive predictors of the psychological well-being of schizophrenia patients ($p < 0.01$).

Table 1: Sociodemographic characteristics of patients with schizophrenia (N = 148)

Characteristic		n	%
Sex	Female	56	37.8
	Male	92	62.2
Age (years)	19–26	64	43.2
	27–34	52	35.1
	42–35	32	21.6
Level of education	Primary	4	2.7
	Preparatory	24	16.2
	Secondary	71	48.0
	University	49	33.1
Marital status	Single	77	52.0
	Married	47	31.8
	Divorced/widowed	24	16.2
Employment	Not employed	109	73.6
	Employed	39	26.4
Place of residence	Rural	56	37.8
	Urban	92	62.2
Presence of children	No	89	60.1
	Yes	59	39.9
Number of children	1–2	39	66.10
	≥ 3	20	33.90
Income	Not sufficient	88	59.5
	Sufficient	60	40.5

N = study sample, n = number, % = percentage

Table 2: Medical data-sheet results of the study population (N = 148)

Medical data-sheet		n	%
Presence of physical disease	No	109	73.6
	Yes	39	26.4
Past history of family mental illness	No	51	34.5
	Yes	97	65.5
Duration of illness	Mean \pm SD = 4.15 \pm 2.55		
Patient age at first diagnosis	Mean \pm SD = 24.10 \pm 6.60		
Beginning of treatment	After some time	55	37.2
	Immediately after the diagnosis	93	62.8
Treatment type	Pharmacological treatment	85	57.4
	Pharmacological treatment and psychotherapy	63	42.6
Is the patient compliant with treatment?	No	63	42.6
	Yes	85	57.4
Is the patient committed to follow-up?	No	59	39.9
	Yes	89	60.1
Does the patient have previous hospitalization(s)?	No	33	22.3
	Yes	115	77.7
How many hospitalizations have occurred?	Mean \pm SD = 2.84 \pm 2.21		
When was the last hospitalization (months ago)?	Mean \pm SD = 13.31 \pm 10.48		
What was the longest time spent in the hospital (days)?	Mean \pm SD = 54.75 \pm 26.98		
Any previous relapses?	No	61	41.2
	Yes	87	58.8
How many relapses?	Mean \pm SD = 3.07 \pm 1.98		

SD = standard deviation, n = number, % = percentage

Table 3: SOC, multidimensional social support, and psychological well-being scores of the study population (N = 148)

	Mean	SD	%
Sense of coherence (points)			
Comprehensibility subscale (total score)	2.63	0.89	40.75
Manageability subscale (total score)	2.38	0.41	34.5
Meaningfulness subscale (total score)	2.57	0.68	39.25
Sense of coherence scale (total score)	2.53	0.37	38.25
Multidimensional social support (points)			
Family support subscale (total score)	3.62	1.02	65.5
Friend support subscale (total score)	3.22	0.99	55.5
Others support subscale (total score)	3.79	1.02	69.75
Multidimensional social support scale (total score)	3.54	0.91	63.5
Psychological well-being (points)			
Positive statement subscale (total score)	0.44	0.18	14.67
Negative statement subscale (total score)	1.22	0.25	40.67
Psychological well-being scale (total score)	0.833	0.21	27.77

SD = standard deviation, % = percentage

Table 4: Variance in SOC, social support, and psychological well-being based on sociodemographic characteristics

		SOC			MSPSS			GHQ		
Characteristic		Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value
Sex	Female	42.14	12.09	^a 0.319	43.8	10.2	^a 0.215	26.64	6.88	^a 0.342
	Male	39.99	13.008		41.7	9.5		25.62	5.99	
Age (years)	19–26	36.42 ^s	11.28	^b < 0.001* *	38.7 ^s	9.2	^b < 0.001**	24.20 ^s	5.93	^b < 0.001**
	27–34	42.69	14.14		43.8	10.5		27.62	7.24	
	35–42	46.50	10.02		47.9	6.4		28.63	4.25	
Level of Education	Primary	31.00	0.00	^b < 0.001* *	42.0	0.0	^b < 0.001**	22.00	0.0	^b < 0.001**
	Preparatory	26.67	7.02		33.3	7.3		19.33	2.87	
	Secondary	38.45	11.74		40.0	9.6		24.99	6.22	
	University	51.94 ^s	5.30		50.7 ^s	3.9		31.08 ^s	3.23	
Marital status	Single	36.58 ^s	13.23	^b < 0.001* *	38.7 ^s	10.0	^b < 0.001**	24.29 ^s	6.42	^b < 0.001**
	Married	45.49	10.16		46.2	8.1		28.49	6.46	
	Divorced/wi dowed	45.17	11.18		47.33	7.01		26.67	3.71	
Employment	Not employed	34.94	10.77	^a < 0.001* *	38.9	9.1	^a < 0.001**	22.49	4.78	^a < 0.001**
	Employed	45.92	12.10		45.7	9.4		29.08	6.93	
Place of Residence	Rural	28.50	7.89	^a < 0.001* *	33.5	7.5	^a < 0.001**	20.29	4.68	^a < 0.001**
	Urban	48.29	8.59		48.0	6.5		29.49	4.38	
Presence of children	No	36.37	12.46	^a < 0.001* *	38.9	9.4	^a < 0.001**	24.16	6.51	^a < 0.001**
	Yes	47.49	9.93		47.9	7.7		28.90	4.91	
Number of children	1–2	43.33	10.45	^a 0.155	47.38	8.99	^a 0.449	28.49	5.79	^a 0.504
	≥ 3	48.83	12.12		49.00	4.65		29.40	2.39	
Income	Not sufficient	35.00	11.11	^a 8.58	38.5	9.7	^a < 0.001**	22.59	5.13	^a < 0.001**
	Sufficient	49.32	9.84		48.4	6.4		31.07	4.29	

^a Independent t-test was used; ^b one-way analysis of variance was used - ** Significant difference at 0.01; ^s Significantly different using Scheffe's post-hoc test-SOC: sense of coherence, MSPSS multidimensional scale of perceived social support; GHQ: general health questionnaire

Table 5: Variance in SOC, social support, and psychological well-being according to participants' medical data

		SOC			MSPSS			GHQ						
Characteristic		Mean	SD	p-value	Mean	SD	p-value	Mean	SD	p-value				
Past history of family mental illness	No	42.04	12.45	^a 0.393	42.2	10.3	0.759	26.49	5.49	^a 0.503				
	Yes	40.16	12.76		42.7	9.6		25.75	6.75					
Beginning of treatment	After a period	30.58	5.9	^a < 0.001**	35.5	6.5	^a < 0.001**	21.51	4.36	^a < 0.001**				
	Immediately after the diagnosis	40.85	7.8		46.6	9.1		28.67	5.81					
Treatment type	Pharmacological treatment	35.66	11.12	^a < 0.001**	38.4	9.4	^a < 0.001**	23.51	6.16	^a < 0.001**				
	Pharmacological treatment and Psychotherapy	47.74	11.42		48.1	7.3		29.38	4.86					
Is the patient compliant with treatment?	No	28.86	7.09	^a < 0.001**	33.3	6.6	^a < 0.001**	20.43	3.12	^a < 0.001**				
	Yes	49.66	7.71		49.3	5.0		30.14	4.73					
Is the patient committed to follow-up?	No	27.97	6.53	^a < 0.001**	32.6	6.2	^a < 0.001**	19.98	2.73	^a < 0.001**				
	Yes	49.31	7.63		49.1	5.1		30.0	4.60					
Does the patient have previous hospitalization(s)?	No	52.39	5.97	^a < 0.001**	50.0	3.4	^a < 0.001**	33.03	2.54	^a < 0.001**				
	Yes	37.47	12.19		40.3	10.0		23.99	5.61					
Any previous relapses?	No	52.41	4.66	^a < 0.001**	51.4	3.2	^a < 0.001**	32.30	2.08	^a < 0.001**				
	Yes	32.67	9.94								36.3	7.9	21.60	4.23
Duration of illness	Correlation	-0.287		^b < 0.001**	-0.292		^b < 0.001**	-0.365		^b < 0.001**				
The patient's age at the first diagnosis	Correlation	0.430		^b < 0.001**	0.441		^b < 0.001**	0.377		^b < 0.001**				
Number of previous hospitalizations	Correlation	-0.613		^b < 0.001**	-0.702		^b < 0.001**	-0.621		^b < 0.001**				
Last time of hospitalization	Correlation	0.500		^b < 0.001**	0.488		^b < 0.001**	0.505		^b < 0.001**				
The time spent in the hospital (days)	Correlation	0.434-		^b < 0.001**	0.586-		^b < 0.001**	0.473-		^b < 0.001**				
How many times of previous relapse	Correlation	0.559-		^b < 0.001**	0.658-		^b < 0.001**	0.629-		^b < 0.001**				

^a Independent t-test was used; ^b Pearson's correlation was used * Significant difference and correlation at 0.01- SOC: sense of coherence, MSPSS multidimensional scale of perceived social support; GHQ: general health questionnaire

Table 6: Pearson's correlation coefficients (R) for SOC, social support, and psychological well-being

	GHQ	SOC
SOC scale	R = 0.933** p < 0.001	N/A
MSPSS	0.887**R = p < 0.001	R = 0.913** p < 0.001

** Significant correlation at 0.01

SOC: sense of coherence, MSPSS multidimensional scale of perceived social support; GHQ: general health questionnaire

Table 7: Regression analysis of SOC and perceived social support with psychological well-being

Model	Unstandardized coefficients				R ²	F	Sig.
	B	Std. error	t	Sig.			
Constant*	7.045	0.635	11.093	0.000	0.870	977.285	< 0.001***
SOC scale	0.465	0.015	31.262	0.000			
Constant**	1.668	1.078	1.546	0.000	0.786	536.400	< 0.001***
MSPSS**	0.573	0.025	23.160	0.000			

*MSPSS was the constant, SOC was the independent variable, and psychological well-being was the dependent variable

**SOC was the constant, MSPSS was the independent variable, and psychological well-being was the dependent variable

*** Significant regression at 0.01

Discussion

Schizophrenia is a severe chronic mental disorder that is associated with periods of remission and recurrent acute phases, leading to enormous impacts and a significant burden on the patient's life. The present study aimed to investigate the relationship of SOC and social support with psychological well-being among patients with schizophrenia.

Our results revealed that most of the participants were 19 to 26 years old, single, and unemployed men. Although schizophrenia affects both men and women almost equally, it may have an earlier onset in males, more greatly affecting their functioning during a crucial stage of growth and development. This result is in agreement with those reported by **Abdulrahman et al. (2020)** who reported that 70% of their studied patients with

schizophrenia in Port Said, Egypt were men 30% were women, while 55% were single. In the same way, **Kate et al. (2013)** reported a predominance of male schizophrenic patients who were unmarried, unemployed, and aged between 15 and 35 years old. Similar to our experience, previous studies have reported that patients with schizophrenia often have functional impairments due to neuro- and social cognition deficits in addition to negative symptoms like an inability to feel pleasure during normally pleasurable activities and a lack of motivation and interest. All of these may lead to the patient's inability to perform their roles in society or to build social relationships, especially outside their family environment; consequently, they often do not marry (**Browne et al., 2020; Guedes de Pinho et al., 2018**).

Concerning the SOC level, the current study reported that the highest percentage of SOC was in the comprehensibility category. This may be attributed to the fact that the study was conducted on outpatients who were in their recovery process with good control of symptoms. Thus, they may have had a stronger sense of comprehensibility due to an accurate assessment of reality and a greater carelessness about external events in the world.

Recovery from schizophrenia is a slow process that often requires multiple years to recover health and independent functioning, to repair family communications, and to restore the patient's professional role in society again as indicated in our study. This result is in harmony with the study of **Witkowska-Luć (2018)** who observed a higher level of SOC in their sample of Polish psychotic patients and noted that greater levels of comprehensibility were associated with decreased psychiatric symptoms, especially negative ones, signifying recovery. In the same way, **Bronowski et al. (2016)** revealed that SOC is considered a health-promoting factor that helps people with schizophrenia in their recovery process via helping them more effectively cope with stress to regain health and become satisfied with their life despite the limitations of their illness. Also, **Torgalsbøen and Rund (2010)** mentioned that most patients diagnosed with schizophrenia can recover due to recent advances in disease treatment, which help them to live independently and recommence their roles. Unsurprisingly, **Bazyńska et al. (2002)** found that their sample of adolescent psychotic hospitalized patients had lower SOC scores relative to their family members; this was maybe due

to the fact that patients were in an acute disease stage during hospitalization.

The current study sample reported the highest percentage of support was received from others, which may encompass doctors, nurses, or others who are friendly yet nonjudgemental while listening, caring, and understanding the disease process, followed by that from family members. This result was in congruence with a study performed in Pakistan by **Jameel et al. (2020)** who found that most of their sample of patients with schizophrenia receive more support from others, followed by from family, then from friends. In the same line, another study of patients with schizophrenia in Portugal identified that the highest scores of social support satisfaction concerned that from the family and the lowest scores concerned that from friends (**Guedes de Pinho et al., 2018**). This result is inconsistent with the research by **Sawant and Jethwani (2010)** in India who concluded that patients with schizophrenia perceived the receipt of more social support from friends than from their families; however, these different results may be attributed to the reality that the studied patients in the other hand, psychological well-being was significantly lower among younger and single schizophrenia patients.

patients in the current study were still having unique positive or negative symptoms of schizophrenia despite being treated.

Our current study revealed a low percentage of total psychological well-being, particularly in response to the positive statements. These findings may be ascribed to the characteristics of the study sample as the majority of them were young men who had not completed their education, were not employed, and were single; and all of these factors may contribute to a lack of psychological well-being. These results were consistent with those of **Makara-Studzinska et al. (2011)** who reported that patients with mental disorders exhibit less well-being than the general population. In the same vein, **Stanga et al. (2019)** found that the flourishing mental health in psychiatric patients was still significantly lower than that in controls.

The current study demonstrated that the mean scores of psychological well-being were significantly higher for participants who were university-educated and employed with urban residency, children, and a sufficient income. O

This result was inconsistent with the findings of the previous study by **Widschwendter et al. (2018)** who reported

that no statistically significant association existed between the personal well-being of patients with schizophrenia and their characteristics, i.e., age, sex, duration of illness, and inpatient status (as compared with outpatient status). Also, **Stanga et al. (2019)** suggested that the only significant association of well-being was male sex (34.9% in males vs. 24.1% in females), while age, education, living status, salary/benefits, and physical health were not significantly associated.

The results of the present study indicate highly statistically significant differences exist between SOC and social support according to most of the sociodemographic characteristics assessed as the mean values of these parameters were significantly higher among participants who were university-educated and employed with urban residency, children, and a sufficient income. In opposition, the mean scores for SOC and social support were significantly lower among younger, unmarried participants.

Our findings were consistent with those of the study by **Hakanen et al. (2007)** who established that SOC tends to increase with age during their follow-up study of participants monitored from childhood to adulthood and may fall into a steady state if

a high SOC was observed to begin with at study baseline. In contrast, the results of **Sarenmalm et al. (2013)** contradicted our findings as they stated that there was no association between SOC scores and age, marital status, employment, level of psychosocial functioning, duration of illness, or monthly income. Also, a study conducted in Poland on a sample of adolescent psychotic hospitalized patients reported significantly low SOC scores among them.⁴⁴

Concerning the differences in social support perception according to sociodemographic features, our results were congruent with those of **Mekonnen et al. (2019)**, who found that primary and secondary levels of education, more than three hospital admissions in the past, and poor commitment to medication were significantly associated with poor and medium perceived social support in their sample of patients with schizophrenia from Ethiopia.

The findings of the current study reflected a highly statistically significant difference among SOC, social support, and psychological well-being based on some medical data and history of illness. Higher mean scores of these variables were found among participants who had begun

treatment immediately after their diagnosis, were receiving concurrent pharmacological treatment and psychotherapy, were complying better with the treatment regimen, were more committed to the follow-up, had no previous hospitalizations, and had no previous relapse history. Meanwhile, there was a significant positive correlation between the SOC, social support, and psychological well-being scores and both the patient's age at the first diagnosis and their last hospitalization as well as a significant negative correlation with the duration of illness, number of previous hospitalizations, time spent in the hospital (in days), and number of previous relapses. Those results may be attributed to the idea that adequate SOC and social reinforcement for patients with schizophrenia serve as protective mechanisms to help the patient to deal with stressors, healing, and recovery during the disease process.

This result is in agreement with a German study by **Gassmann et al. (2013)**, who reported that schizophrenia patients with high SOC scores boasted a reduced admission rate, a higher level of general functioning, fewer psychopathological symptoms, and a stronger perceived effect of their medical treatment. In agreement, **Arsova et al. (2014)** exposed that a combination of medical treatment and

psychosocial therapy delivered at home with the social support of the surrounding people can facilitate and improve the self-care of patients with schizophrenia, increasing their welfare.

Also, **Vázquez Morejón et al. (2018)** mentioned that global social support quality and satisfaction are defensive factors against hospital admission frequency and duration. According to **Guedes de Pinho et al. (2018)**, social support is essential and affects the quality of life of people with schizophrenia as it helps them to adapt to events in their daily lives, especially stressful ones. At the same time, Indian schizophrenia patients with poor and medium levels of perceived social support suffered from poor medication adherence in a manner that was inversely correlated with subjective well-being (**Lama & Baruah, 2019; Raj et al., 2016**).

These results confirm with what has been reported by the **American Psychiatric Association (2013)** in that a more positive outcome of schizophrenia has been correlated with several factors as good functioning prior to illness onset, older age at first episode, female sex, rapid onset of symptoms, mood disturbance, rapid recovery from active-phase symptoms, minimal residual symptoms, normal

neurological functioning, and an absence of structural brain abnormalities or family history of schizophrenia.

In the same vein, the current findings revealed a highly statistically significant positive correlation between the three variables of SOC, social support, and psychological well-being. Both SOC and perceived social support were considered significant positive predictors of the psychological well-being of schizophrenia patients. In harmony, **Izidorczyk et al. (2019)** reported that social support has a positive effect on patients' physical and mental status as those with more social resources or networks had a greater possibility and ability to adapt to change and attain a better health state.

According to **Świtaj et al. (2017)**, SOC is an important personal resource that is correlated with quality of life in patients with mental illnesses and could be considered as a shield that limits negative emotions. Meanwhile, **Vera-Garcia et al. (2015)** mentioned that social support helps individuals to fulfill their social needs and to facilitate better self-esteem, communication, and moral support. Also, **Onken et al. (2007)** suggested that social support is a key source of psychological

health and a specific source of aid to achieve recovery.

Meanwhile, **Pevalin and Goldberg (2003)**, **Corrigan and Phelan (2004)** reported that greater social network size and social support are correlated with better recovery among persons with serious mental illness. Several previous studies have also contended that social support is one of the many factors that may increase or decrease the likelihood of developing schizophrenia; furthermore, schizophrenia patients' perception of social support greatly affects their readiness to receive various forms of treatment modalities—including medication, psychological counseling, and self-support—in addition to assisting them with initiating, complying, and following up with therapeutic interventions (**Gross et al., 2016; Jameel et al., 2020**).

Conclusion

In conclusion, the present study provides significant information related to SOC, social support, and psychological well-being in patients with schizophrenia. The highest percentages of SOC were found in the comprehensibility and meaningfulness categories, respectively. Regarding the multidimensional social

support, the highest percentage of such reported by the study sample was received from others, then from their family. The current results revealed that a low total percentage of psychological well-being, particularly regarding positive statements, existed among participants. Also, SOC and social support showed a highly significant positive correlation with psychological well-being. Finally, the SOC scale and the perceived social support can be considered significant positive predictors of the psychological well-being of schizophrenia patients.

Recommendations:

The authors recommend endorsing the application of intervention programs for patients with schizophrenia that enhance SOC to improve their psychological well-being and recovery from disease. Besides, it is recommended to offer the caregivers of schizophrenic patients more educational programs about the importance of delivering social support and its impact on patient compliance with treatment and recovery from symptoms of schizophrenia. Likewise, we need to implement strategies

that strengthen the social relationships of patients in psychosocial rehabilitation.

Also, training programs should be offered to health care providers to improve their skills in screening all schizophrenic patients for their medication adherence and in providing necessary clinical interventions, treatment, and support. Finally, it is recommended to collect random samples from hospitals in different cities in Egypt to generalize the findings of this study on a larger scale.

Strengths and limitations

Lack of randomization was one of the main study limitations as it affects study generalizability. Also, during the data-collection phase, some patients refused to participate in the study, probably due to the stigma of mental illness which may threaten the internal validity of the research.

Ethics and Human Rights

This study abided by all national and international ethical considerations of scientific research, in compliance with the Helsinki Declaration of ethical principles for medical research involving human subjects. Ethical approval was obtained from the scientific and ethical committee of the Faculty of Nursing at Zagazig

University and the concerned authorities at Zagazig University Hospital (ethical approval no. 8/6/2020/6375), and the interviews were performed with individual patients after collecting their oral consent to participate in the study.

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