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Socio-demography and psychosis symptom severity among male schizophrenia – Diagnosed patients of MOH Mental Health Facilities, Kingdom of Saudi Arabia; a correlational study

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Introduction

Schizophrenia is a chronic and disabling condition that has a large impact on the patient's life with Psychosis as its primary symptom paving a debilitating condition for the patient including the patient's significant others. Because of its severity and its prevalence, the World Health Organization (WHO) classify schizophrenia as one of the leading causes of disability in developed countries worldwide (Murray & Lopez, 1996). There is even a question on current statistics on prevalence in developing and third-world countries. It has been observed in at least 1% of the population worldwide have schizophrenia (Gogtay, Vyas, Testa, Wood, & Pantelis, 2011). Furthermore, there has been a considerable variation in incidence rates of schizophrenia around the world (Messias, Chen, & Eaton, 2007).

In Saudi Arabia, based from the Health Statistics of the Ministry of Health (MOH), a total of 8624 new and recurrently admitted inpatients and 141,775 new and recurrently attended outpatients have diagnosis of Schizophrenia, schizotypal, & delusional disorders (MOH, 2016). As in this case become a major public health concern which stimulated a great interest; it is noteworthy to be given extra attention in order for the populace to have the capability to sufficiently adjust to new "conditions" of great technological advancement challenging current social norms and cultural "uniqueness" unchanged or minimally adjusted to it, or to just adopt into such inevitable changes by this embattled society.

Several studies have looked at the etiology of Schizophrenia, Psychosis and the factors associated with this chronic condition. This included available models that tried to explain such behavioral phenomenon, for example, is the Systems Theory which in particular "the System Model of Betty Neuman" (Alligood & Marriner-Tomey, 2014). This study looked at this same behavioral phenomenon called Schizophrenia having Psychosis as its primary debilitating symptom where one explanation can't be easily afforded but at the very least a conjugation of explanations to shed possible light into its understanding. A person is a complicated entity (or a system) whose entirety rests on the facts that a multitude of factors (subsystems) may be identified each one a living dynamic condition in itself possibly affecting and affected by other factors (internally and/or externally) (Knight, 1990). Betty Neuman's Systems model asserts a number of assumptions that greatly influences the foundation within which this study progresses from. (1) "Each patient system is a unique composite of factors (those identified as extrapersonal and intrapersonal) and characteristics within a range of responses contained in a basic structure"; (2) "The particular inter-relationships of patient variables can, at any point in time, affect the degree to which a client is protected by the flexible line of defense against possible reaction to stressors" (explaining the wide varying severity levels that may or may not really manifest a negative life situation for the patient); (3) and, "the patient is in dynamic, constant energy exchange with the environment" (that once diagnosed, prognosis is a good guess as any) (Bourdeanu & Vivien, 2013).

The current evidence suggests that there is variation exhibit according to family history of mental illness and by place of birth (Kirkbride, Errazuriz, Croudace, et al., 2012). Existing literature also observed patients with different medical, neurological and genetic diseases had experience of psychotic symptoms particularly with young age (Giannitelli et al., 2017). However, not all people who experience psychotic symptoms will develop or go on into schizophrenia (Yung, Phillips, Yuen, & McGorry, 2004). It has been a goal of clinicians to identify the individuals with high risk of developing symptoms of psychosis. The identification of patients who were in high risk of developing these symptoms may help in prevention and treatment of onset of the symptoms. At present, little is known about factors associated with psychosis among schizophrenia patients, even within the Arab country such as Saudi Arabia.

In the fast-evolving situation in the Kingdom of Saudi Arabia and its

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Saudi Citizenry, economic and other aspects, specifically mental health may have to be given extra attention in order for the populace to have the capability to sufficiently adjust to new "conditions" of the modern world of fast-pace technological advancement or adopt into such inevitable changes. Entirely, the challenge is to manage public mental health or the possible occurrence of mental illness or mental disability. This study specifically intends to add into the existing knowledge building from previous research studies known to publication and put certain perspective into most recognized socio-demographic factors affecting mental health in general among Male Saudis. Another is to determine the severity of Psychosis symptoms among the Schizophrenia-diagnosed patients, and identify grouped demography features as intrapersonal/extrapersonal factors against disease experience (less than or > 1 year) and admission status (initial or readmission). Ultimately, possible existing correlation between demographic factors and psychosis-symptom severity, if any, among Schizophrenia-diagnosed male patients from Ministry of Health (MOH) Mental Health Facilities in the Kingdom of Saudi Arabia.

Methods

Study design and setting

This descriptive cross-sectional study concerned among Schizophrenia-diagnosed patients in Mental Health Facilities in Saudi Arabia. As this study was intended to cover as much as the larger experience of mental health patients in the Kingdom of Saudi Arabia, it included the four (4) major mental health facilities under the direct supervision of the Ministry of Health (MOH) situated in the different provinces and regions of the country. Each of the mental health institutions included a wide-ranging mental health services administering to acute conditions like drug rehabilitations to long-term care for patients diagnosed of Schizophrenia.

Data gathering procedure

The process involved two (2) concerns to be able to attain the much desired reliable output. First, the data collectors or researchers were chosen because of their qualifications; psychiatric nurses certified by the Saudi council. No other route of data collection was allowed except for the personal collection processes done by the members themselves. All included participants had been assessed by trained researchers, who used the Diagnostic and Statistical Manual of Mental Disorders criteria (DSM-5) to confirm the absence or presence in severity level of psychotic symptoms (DSM-5, 2013). The collection process used available documents part of the individual patient files and was validated with their corresponding relatives authorized to sign the consent form intended for this research proceeding. Second, cultural limitations guided the research process to limit it to male participants only as there were no female research members in the team.

Sample

There were about 156 completed and accomplished data collection forms included as formal sample size. Mental Health Facility (MHF) 1 got 49, MHF 2 = 56, MHF 3 = 25, and MHF 4 = 55 with a total of 156. Each mental health facility holds an average of about 150–250 capacity solely for those diagnosed with psychosis and/or schizophrenia. Though more than enough time was spent, most relatives of the prospective patient participants particularly female patients did not give approval to divulge important patient information which for them was too personal. A total of 6 months was spent to gather data and tried a second time to encourage participation from responsible relatives of prospective patient participants which ended in vain.

Instrument

A standardized test was used developed as free referenced tool by the American Psychological Association (APA) in their DSM-5 (*Diagnostic and Statistical Manual of Mental Disorders – 5th Version*) published reference manual entitled "*Clinician-Rated Dimensions of Psychosis Symptom Severity*". This assessment tool defines psychosis experience among Schizophrenia-diagnosed patients evaluating the severity in its different domains which included hallucinations, delusions, disorganized speech, abnormal psychomotor behavior, negative thoughts, impaired cognition, depression, and mania (DSM-5, 2013). As mentioned, it is a technical tool of observation used by clinicians whose severity, or lack thereof, is decided in accordance with the guide symptomatology ranging from 0 – symptom not present, 1 – slightly present, 2 – present and mild, 3 - present and moderate, 4 – present and severe. This formed the 2nd main part of the research tool whose 1st part included chosen demographic data.

The first part entitled demography included internal (intrapersonal) and external (extra-personal) factors of the prospective participants. Internal factors encompassed the following: civil status, age, leisure interest, educational attainment, and employment status; while the external factors comprised the following: parent's marital status, family size, residence situation, and family socio-economic status. It also included the disease experience (of less than or more than a year) and diagnosis status (either 1st admission or readmission) according to medical records.

Statistical analysis

The data used in this study were analyzed using IBM SPSS Statistics Version 23. Descriptive statistics was used to characterize the samples in the light of the factors identified central to the study. All continuous data were presented as mean ± standard deviation (SD) while categorical data were presented as frequencies, percentages (%) and cross-tabulation. Pearson's Chi-square analysis was utilized to determine the association between demographic factors and psychosis symptoms among Schizophrenia-diagnosed patients.

Ethical considerations

This study was approved by the Ethics Committee of the Ministry of Health (MOH) – Kingdom of Saudi Arabia and was subsequently further evaluated by the four (4) institutional review boards (IRBs) from the four separate mental health institutions before actual data gathering was allowed. Related forms were signed to emphasize the highest level of confidentiality. Patient participants through their respective guardians gave and signed individual informed written consent after reading and explaining the entire study and scope of participation. Also, all researchers who took part in the actual data gathering were required certification from the National Institutes of Health of the US Department of Health and Human Services on "*Protecting Human Research Participants*".

Results

Table 1 shows the characteristics of the 156 participants in the study. Twenty-six percent of the participants were in the age group of 31–40 years old, 23% were 21–30 years old and only 7% were > 60 years old. The majority of the participants were single (78.6%) and unemployed (68.6%). Only 10% of the participants held university degrees and 26% completed secondary education. Of 156 participants, 32.1% lived in Riyadh, 16% in Madinah, 16% in Jeddah and 35.9% in Taif, Saudi Arabia. More than fifty percent of the participants lived in Urban area (57.11%). Related to lifestyle and leisure interest, more than two thirds were identified as "homebody" or mostly without active social activities specifically 103 (66.0%).

Table 1
Demographic characteristics of the sample.

Characteristics (factors)	N (156)	%
Age		
Below 20 years old	3	1.9
21–30	37	23.7
31–40	41	26.3
41–50	32	20.5
51–60	32	20.5
> 60 years old	11	7.1
Civil status		
Single	122	78.2
Married	34	21.8
Employment status		
Unemployed	107	68.6
Employed	49	31.3
Educational level attained		
Primary	98	62.8
Secondary	41	26.3
Bachelor's degree and above	17	10.9
Residence		
Riyadh	50	32.1
Madinah	25	16
Jeddah	25	16
Taif	56	35.9
Residence (category)		
Rural	67	42.9
Urban	89	57.1
Leisure interest		
Homebody	103	66.0
Outgoing/sociable/athletic	53	33.9
Parents marital status		
Intact	130	83.3
Separated	26	16.7
Household size		
Small (1–4 members)	22	14.1
Medium (5–10 members)	91	58.3
Large (> 10)	43	27.6
Family socio – eco status		
Low income category	125	80.1
Mid income category	30	19.2
High income category	1	0.6
Admission status		
1st admission	26	16.7
Readmission	130	83.3

As regards family features, there were 130 (83.3%) who came from an intact family and 26 (16.7%) from separated/divorced marital status. More than half of the participants came from family of 5–10 members considered as medium size, 91 (58.3%). Validated from patient's interviewed relative/s, a great number of 125 (80.1%) affirmed the family's socio-economic status under low income category. The majority of the participants were cases fall under readmission status (83.3%).

Table 2 presents the results of severity of the mental health symptoms among the participants. The mean scores on the hallucinations were 2.02 (SD = 1.02), delusions 1.85 (SD = 0.86), disorganized speech 1.60 (SD = 1.08), negative thoughts 1.77 (SD = 0.83), impaired cognition 1.99 (SD = 0.94), depression 2.07 (SD = 0.95) indicating present symptoms but of mild condition. Meanwhile, the symptoms of abnormal Psychomotor had a mean score of 1.39 (SD = 1.04) and Mania 1.57 (SD = 1.10) indicating presence but of slight symptom severity. The overall status had a mean score of 1.79 (SD = 0.61) showing presence but of mild symptom level of severity.

The analysis shows intrapersonal factors against their disease experience and diagnosis status, the following results came and is summarized at Table 3. Prominence of highest proportions came from those with disease experience of > 1 year or experiencing the Acute Stage of

Table 2
Psychosis symptom severity (N = 156).

Symptom domains	Mean	Std. dev.	Remarks
Domain 1 Hallucinations	2.02	1.025	Present and Mild
Domain 2 Delusions	1.85	0.864	Present and Mild
Domain 3 Disorganized speech	1.60	1.082	Present and Mild
Domain 4 Abnormal psychomotor	1.39	1.045	Slightly Present
Domain 5 Negative thoughts	1.77	0.834	Present and Mild
Domain 6 Impaired cognition	1.99	0.940	Present and Mild
Domain 7 Depression	2.07	0.951	Present and Mild
Domain 8 Mania	1.57	1.102	Slightly Present
Over-all status	1.79	0.617	Present and Mild

Symptoms Not Present (0 = 0.0–0.5), Slightly Present (1 = 0.6–1.5), Present and Mild (2 = 1.6–2.5), Present and Moderate (3 = 2.6–3.5), Present and Severe (4 = 3.6–4.0).

psychosis condition specifically those who are single (n = 76, 48.7%), age range of 31–40 years old (n = 29, 18.6%), homebody (n = 70, 44.9%), attained basic education (n = 67, 42.9%), and are unemployed (n = 75, 48.1%). Coincidentally, those with long disease experience with the greater chances of more than one admission status resulted same highest proportions of their conditions in the same intrapersonal factors. Specifically, single (n = 88, 56.4%), age range of 31–40 years old (n = 37, 23.7%), homebody (n = 90, 57.7%), attained basic education (n = 82, 52.6%), and are unemployed (n = 86, 55.1%).

The analysis identified extra-personal factors against their disease experience and diagnosis status, the following results came and is summarized at Table 4. Prominence of highest proportions came from those with disease experience of > 1 year or experiencing the Acute Stage of psychosis condition specifically those who came from intact parent's marital status (n = 93, 59.6%), medium size family of 5–10 members (n = 62, 39.7%), urban dwellers (n = 65, 41.7%), and family considered under low income category (n = 91, 58.3%). Coincidentally, those with long disease experience with the greater chances of more than one admission status resulted same highest proportions of their conditions in the same intrapersonal factors. Specifically, those who came from intact parent's marital status (n = 104, 66.7%), medium size family of 5–10 members (n = 75, 48.1%), urban dwellers (n = 74, 47.4%), and family considered under low income category (n = 108, 69.2%).

The association between mental health symptoms severity and Intrapersonal & Extrapersonal factors of the participants were shown in Table 5. On examining the association between mental health symptoms severity to the intrapersonal factors, the analysis found significant association between civil status, leisure interest, edicational attainment and employment status or situation. There were significant associations found between disorganized speech (p = .025), overall all health status (p = .042) and civil status. Meanwhile, educational attainment (p = .004) and employment status (p = .012) were found significantly associated with impaired cognition. The association between leisure interest and abnormal psychomotor, impaired cognition and depression was found statistically significant (p = .001). Also, leisure interest was seen significantly associated with hallucination (p = .034), disorganized speech (p = .007), mania (p = .026) and over-all severity score (p = .050). With regards to external factors, family size and family socio-economic status was found significantly associated with mental health symptoms. The analysis found family size was associated with hallucination (p = .049) while disorganized speech was found significantly associated with family socio-economic status (p = .025). The association between family socio-economic status of the participants and symptom of delusion, depression and over-all health status were found statistically significant.

Discussion

This descriptive study provides insight into severity of psychosis

Table 3
Intrapersonal experience & diagnosis status (N = 156).

Intrapersonal factors		Disease experience < 1 year or > 1 year	*n*	%	Diagnosis status 1st Admission or Readmission	*n*	%
Civil status	Single	> 1 year	76	48.7	Readmission	88	56.4
Age range	31–40 years old	> 1 year	29	18.6	Readmission	37	23.7
Leisure interest	Homebody	> 1 year	70	44.9	Readmission	90	57.7
Educ. level attained	Basic Education	> 1 year	67	42.9	Readmission	82	52.6
Employment situation	Unemployed	> 1 year	75	48.1	Readmission	86	55.1

symptoms among male schizophrenia patients in Saudi Arabia. The overall results of our study shows present but mild mental health symptoms among male schizophrenia patients. The findings are comparable to the study conducted in South Korea by Park SC, concerning the means scores for hallucinations, delusion and depression (Park, Lee, & Choi, 2016). People with psychosis or schizophrenia usually have their own combination of psychosis symptoms which will vary depending on their particular personal circumstances or situation (Bae, Lee, Park, Hyun, & Yoon, 2010). Although the findings of our study show present but mild mental health symptoms, these symptoms have a considerable effect on patients wellbeing particularly on social functioning (Bae et al., 2010). For example, impaired social problem solving, interpersonal relationship and poor work performance. Furthermore, these symptoms have been recognized to be highly prevalent in people with psychosis and/or diagnosed Schizophrenia (Bae et al., 2010; Couture, Penn, & Roberts, 2006).

The findings from this study have highlighted the highest proportion of readmission and disease experience on patients who were single, age range between 31 and 40 years old, homebody, had primary or basic education and unemployed. The findings were parallel with previous study in Taiwan that determined younger age and unmarried patients were a significant risk factor of readmission (Hung, Chan, & Pan, 2017). Interestingly, highest proportion of readmission and disease experience was found on external factors such as intact family marital status and patients who live in urban area. This may indicate a peculiarity in the socio-cultural norms found in this locale or among the respondents' conditions that may need further looking into (AlAteeq, AlDaoud, AlHadi, AlKhalaf, & Milev, 2018; Dardas & Simmons, 2015).

The factors associated with psychosis among Schizophrenia-diagnosed in Saudi Arabia. Several studies have focused on identifying variations of factors to elucidate the underlying mechanisms of schizophrenia (Cohen, Patel, Thara, & Gureje, 2008; Kirkbride et al., 2006; McGrath et al., 2004). Some of these studies have helped yield a greater understanding of the disease development and progression (Cardno et al., 1999; Hafner, Maurer, Loffler, & Riecher-Rossler, 1993; Kirkbride & Jones, 2011; Mortensen et al., 1999; O'Donovan et al., 2008). Our findings show potentially important relationships between psychosis and socio-demographic factors of patients with schizophrenia. Firstly, there are clear differences between civil status and psychosis symptoms like disorganized speech and with the overall severity score. Meanwhile with the age range, significant association was found with psychosis symptoms of impaired cognition. The results were similar to those seen in past studies with different age- onset patients with schizophrenia (Chen, Selvendra, Stewart, & Castle, 2018; Gogtay et al., 2011). Previous studies concur that the typical age onset of major neuropsychiatric illnesses like schizophrenia is in early twenties or late adolescence, as well slight later onset among females (Howard, Rabins, Seeman, & Jeste, 2000). This condition was rooted from the neurodevelopmental theory of Murray and Lewis, and by Weinberger, which the typical age of onset of schizophrenia is early twenties or late adolescence (Murray & Lewis, 1987; Weinberger, 1987).

Another highlight of the study is that the other extra-personal factors like family socio-economic status was found associated with disease experience of > 1 year or experiencing the Acute Stage of psychosis. The findings of this study are in line with previous literature in regards to association of socioeconomic status in risk of schizophrenia and mental health symptoms (Molarius, Berglund, Eriksson, et al., 2009; Werner, Malaspina, & Rabinowitz, 2007). Genetic risk is the leading factor of developing a psychotic disorder (Gilmore, 2010). However, all individuals have considerable variation in their pattern of symptoms depending on the course of any problems and difficulties. In order to explain the development of psychosis and schizophrenia, biological risks are not sufficient. Both biological and psychosocial or environmental risk should be taken into consideration. Examples of potential psychosocial risk include poor rearing environment, abuse like sexual, physical and emotional, neglect and bullying (Bebbington et al., 2004; Van Dam et al., 2012; Varese et al., 2012). Thus, some people with low economic status and have disturbing experiences were highly predictive of psychosis onset. These patients may need a vigorous monitoring and follow up of mental state as well as supportive therapy and stress management.

In addition, identifying these factors and providing support to the patients may reduce the symptoms associated with schizophrenia. People with schizophrenia experiencing feeling of loneliness, suffer from anxiety and underrate their own capabilities may trigger the symptoms of psychosis. Studies show that change in self-esteem was significantly associated with severity of negative symptoms such as anhedonia, alogia and anergia as well as persecutory dellusions and hallucinations (Jones, Hansen, Moskvina, Kingdon, & Douglas Turkington, 2010; Romm et al., 2011). Therefore, improvement in patients' self-esteem, self-efficacy and self-worth may lead to reduction of symptoms of psychosis. All these characteristics highlight the importance of rehabilitation and support among patients. The rehabilitation or support program should focus on improving the confidence, feeling of optimism and patients will exhibit better adaptation abilities.

This study was limited in terms of methodological design which did not allow us to determine the cause between risk factors and psychosis. Another limitation is the sample size that cannot generalize and effect of the larger representative of the country. Lastly, the sample of the study focused only on male patients, because the relatives and patients

Table 4
Extrapersonal experience & diagnosis status (N = 156).

Extrapersonal factors		Disease Experience < 1 year or > 1 year	*n*	%	Diagnosis Status 1st Admission or Readmission	*n*	%
Parent's marital status	Intact	> 1 year	93	59.6	Readmission	104	66.7
Family size	Med (5–10 members)	> 1 year	62	39.7	Readmission	75	48.1
Residence category	Urban	> 1 year	65	41.7	Readmission	74	47.4
Family socio-eco status	Low income category	> 1 year	91	58.3	Readmission	108	69.2

Table 5
Association levels between severity domains and intrapersonal & extrapersonal factors.

Psychosis symptom domains	Civit Status	Age range	Leisure interest	Education attained	Employment situation	Parent's marital status	Family size	Residence category	Family socio-eco status
	Intrapersonal factors					Extrapersonal factors			
D1 Hallucinations	0.265	0.119	0.034	0.404	0.323	0.463	0.049	0.504	0.080
D2 Delusions	0.495	0.165	0.069	0.656	0.204	0.761	0.297	0.879	0.001
D3 Disorganized speech	0.025	0.061	0.007	0.059	0.139	0.260	0.276	0.324	0.025
D4 Abnormal psychomotor	0.592	0.621	0.001	0.104	0.681	0.119	0.795	0.396	0.483
D5 Negative thoughts	0.404	0.849	0.114	0.504	0.337	0.296	0.750	0.458	0.122
D6 Impaired cognition	0.197	0.030	0.001	0.004	0.012	0.844	0.255	0.214	0.669
D7 Depression	0.952	0.134	0.001	0.055	0.274	0.156	0.489	0.497	0.001
D8 Mania	0.390	0.541	0.026	0.347	0.819	0.585	0.912	0.322	0.671
Over-all severity score	0.042	0.530	0.050	0.587	0.580	0.235	0.599	0.434	0.001

Note: All significant values were at $p > .05$.

did not give approval to divulge important patient information. Furthermore, schizophrenia among female patients is a sensitive issue in Saudi Arabia therefore the authors consider the cultural appropriateness of the study. However, the findings of the study may help future researchers as a useful platform in the risk factors associated with psychosis among schizophrenia patients. These findings might also help the administrators and clinicians in developing a rehabilitation program for schizophrenia patients.

Conclusion

The present study revealed a presence of psychosis symptom with a mild severity level. With this result, it made it a considerable factor associated with psychosis among Schizophrenia-diagnosed patients enough to suggest possible strong predictive value with leisure interest, family socio-economic status, and educational attainment. Different factors, interpersonal and extra-personal, can cause and contribute to symptoms of psychosis among schizophrenia patients of varying degrees. Interestingly, disease experience of > 1 year and readmitted status seem to show a great deal of concept separate by themselves that need to have a separate and focused attention. The present findings also suggest that a future research direction should identify areas that may help to elucidate underlying mechanisms of psychosis and facilitate development of service and clinical management to the needs of different age groups, and a more detailed program and workup of these patients that can improve self-esteem, self-efficacy and self-worth.

Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Ministry of Health/King Faisal Medical Center (KFMC) Institutional Review Board Protocol No: 17-072E and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent for publication

All authors have provided consent for publication.

Availability of data and materials

The data set used is locked and stored in the College of Nursing at King Saud University and can be obtained from the principal investigator on reasonable request.

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Declaration of competing interest

The authors certify that there is no competing interest with any financial organization regarding the material discussed in the manuscript.

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References

AlAteeq, D., AlDaoud, A., AlHadi, A., AlKhalaf, H., & Milev, R. (2018). The experience and impact of stigma in Saudi people with a mood disorder. *Annals of General Psychiatry, 17*, 51. https://doi.org/10.1186/s12991-018-0221-3.

Alligood, M. R., & Marriner-Tomey, A. (2014). *Nursing theorists and their work: utilization & application, Elsevier Health Sciences.* St. Louis: Mosby281–293.

Bae, S. M., Lee, S. H., Park, Y. M., Hyun, M. H., & Yoon, H. (2010). Predictive factors of social functioning in patients with schizophrenia: exploration for the best combination of variables using data mining. *Psychiatry Investigation, 7*(2), 93–101. https://doi.org/10.4306/pi.2010.7.2.93.

Bebbington PE, Bhugra D, Brugha T, Singleton N, Farrell M, Jenkins R, et al. (2004). Psychosis, victimisation and childhood disadvantage: evidence from the second British national survey of psychiatric morbidity. *The British Journal of Psychiatry*. 2004;185:220–6.

Bourdeanu, L., & Vivien, D. (2013). Assessment of chemotherapy-induced nausea and vomiting in women with breast cancer: a Neuman systems model framework. *Research and Theory for Nursing Practice, 27*, 296–304.

Cardno, A. G., Marshall, E. J., Coid, B., Macdonald, A. M., Ribchester, T. R., et al. (1999). Heritability estimates for psychotic disorders: the Maudsley twin psychosis series. *Archives of General Psychiatry, 56*, 162–168.

Chen, L., Selvendra, A., Stewart, A., & Castle, D. (2018). Risk factors in early and late onset schizophrenia. *Comprehensive Psychiatry, 80*, 155–162. https://doi.org/10.1016/j.comppsych.2017.09.009 Epub 2017 Sep 20.

Cohen, A., Patel, V., Thara, R., & Gureje, O. (2008). Questioning an axiom: better prognosis for schizophrenia in the developing world? *Schizophrenia Bulletin, 34*, 229–244.

Couture, S. M., Penn, D. L., & Roberts, D. L. (2006). The functional significance of social cognition in schizophrenia: a review. *Schizophrenia Bulletin, 32*(Suppl. 1), S44–S63.

Dardas, L. A., & Simmons, L. A. (2015). The stigma of mental illness in Arab families: a concept analysis. *Journal of Psychiatric and Mental Health Nursing, 22*(9), 668–679. https://doi.org/10.1111/jpm.12237 Epub 2015 Jun 29.

DSM-5 (Diagnostic and Statistical Manual of Mental Disroders 5th Edition): American Psychiatric Association. American Psychiatric Publishing. Washington, DC, USA. 2013; 743–744.

Giannitelli, M., Consoli, A., Raffin, M., Jardri, R., Levinson, D. F., Cohen, D., & Laurent-Levinson, C. (2017). An overview of medical risk factors for childhood psychosis: implications for research and treatment. *Schizophrenia Research, 192*, 39–49. https://doi.org/10.1016/j.schres.2017.05.011 Epub 2017 May 16.

Gilmore, J. H. (2010). Understanding what causes schizophrenia: a developmental perspective. *American Journal of Psychiatry, 167*, 8–10.

Gogtay, N., Vyas, N. S., Testa, R., Wood, S. J., & Pantelis, C. (2011). Age of onset of schizophrenia: perspectives from structural neuroimaging studies. *Schizophrenia Bulletin, 37*(3), 504–513 2011.

Hafner, H., Maurer, K., Loffler, W., & Riecher-Rossler, A. (1993). The influence of age and sex on the onset and early course of schizophrenia. *The British Journal of Psychiatry, 162*, 80–86.

Howard, R., Rabins, P. V., Seeman, M. V., & Jeste, D. V. (2000). Late-onset schizophrenia and very-late-onset schizophrenia-like psychosis: an international consensus. The

International Late-Onset Schizophrenia Group. *Psychiatry, 157*(2), 172–178.
Hung, Y. Y., Chan, H. Y., & Pan, Y. J. (2017). Risk factors for readmission in schizophrenia patients following involuntary admission. *PLoS One, 12*(10), e0186768. https://doi.org/10.1371/journal.pone.0186768.
Jones, R. M., Hansen, L., Moskvina, V., Kingdon, D., & Douglas Turkington, D. (2010). The relationship between self-esteem and psychotic symptoms in schizophrenia: a longitudinal study. *Psychosis, 2*(3), 218–226. https://doi.org/10.1080/17522431003602430.
Kirkbride JB, Errazuriz A, Croudace TJ, et al. (2012). Incidence of schizophrenia and other psychoses in England, 1950–2009: a systematic review and meta-analyses. *PLoS One*; 7(3):e31660.
Kirkbride, J. B., Fearon, P., Morgan, C., Dazzan, P., Morgan, K., et al. (2006). Heterogeneity in incidence rates of schizophrenia and other psychotic syndromes: findings from the 3-Center ÆSOP Study. *Archives of General Psychiatry, 63*, 250–258.
Kirkbride, J. B., & Jones, P. B. (2011). The prevention of schizophrenia—what can we learn from eco-epidemiology? *Schizophrenia Bulletin, 37*, 262–271.
Knight, J. B. (1990). The Betty Neuman systems model applied to practice: a client with multiple sclerosis. *Journal of Advanced Nursing, 15*, 447–455.
McGrath, J., Saha, S., Welham, J., El Saadi, O., MacCauley, C., et al. (2004). A systematic review of the incidence of schizophrenia: the distribution of rates and the influence of sex, urbanicity, migrant status and methodology. *BMC Medicine, 2004*, 2.
Messias, E. L., Chen, C. Y., & Eaton, W. W. (2007). Epidemiology of schizophrenia: Review of findings and myths. *The Psychiatric Clinics of North America, 30*(3), 323–338.
Ministry of Health (2016). Ministry of health portal: statistics book for year 1437H (2016G). Accessed: http://www.moh.gov.sa/en/Ministry/Statistics/Book/Pages/default.aspx.
Molarius, A., Berglund, K., Eriksson, C., et al. (2009). Mental health symptoms in relation to socio-economic conditions and lifestyle factors—a population-based study in Sweden. *BMC Public Health, 9*, 302. Published 2009 Aug 20. doi: https://doi.org/10.1186/1471-2458-9-302.
Mortensen, P. B., Pedersen, C. B., Westergaard, T., Wohlfahrt, J., Ewald, H., et al. (1999). Effects of family history and place and season of birth on the risk of schizophrenia. *New England Journal of Medicine, 340*, 603–608.
Murray, R. M., & Lewis, S. W. (1987). Is schizophrenia a neurodevelopmental disorder? [editorial]. *British Medical Journal (Clinical Research Ed.), 295*, 681–682.
Murray, R. M., & Lopez, A. D. (1996). *Global burden disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020.* Cambridge (MA): Harvard University Press.
O'Donovan, M. C., Craddock, N., Norton, N., Williams, H., Peirce, T., et al. (2008). Identification of loci associated with schizophrenia by genome-wide association and follow-up. *Nature Genetics, 40*, 1053–1055.
Park, S. C., Lee, K. U., & Choi, J. (2016). Factor structure of the clinician-rated dimensions of psychosis symptom severity in patients with schizophrenia. *Psychiatry Investigation, 13*(2), 253–254. https://doi.org/10.4306/pi.2016.13.2.253.
Romm, K. L., Rossberg, J. I., Hansen, C. F., Haug, E., Andreassen, O. A., & Melle, I. (2011). Self-esteem is associated with premorbid adjustment and positive psychotic symptoms in early psychosis. *BMC Psychiatry, 11*, 136. Published 2011 Aug 19. doi: https://doi.org/10.1186/1471-244X-11-136.
Van Dam, D. S., van der Ven, E., Velthorst, E., Selten, J. P., Morgan, C., & de Haan, L. (2012). Childhood bullying and the association with psychosis in non-clinical and clinical samples: a review and meta-analysis. *Psychological Medicine, 42*, 2463–2474.
Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., et al. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin, 38*, 661–671.
Weinberger, D. R. (1987). Implications of normal brain development for the pathogenesis of schizophrenia. *Archives of General Psychiatry, 44*, 660–669.
Werner, S., Malaspina, D., & Rabinowitz, J. (2007). Socioeconomic status at birth is associated with risk of schizophrenia: population-based multilevel study. *Schizophrenia Bulletin, 33*(6), 1373–1378.
Yung, A. R., Phillips, L. J., Yuen, H. P., & McGorry, P. D. (2004). Risk factors for psychosis in an ultra-high-risk group: psychopathology and clinical features. *Schizophrenia Research, 67*(2–3), 131–142.