Symptom Profiles And Clinical Correlates Of Paranoid Schizophrenia In Vietnamese Patients

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Abstract

Aim: Paranoid schizophrenia presents diverse clinical features, and the factors contributing to this heterogeneity are not well understood, particularly in the Vietnamese population. We hypothesized that Vietnamese patients with paranoid schizophrenia would exhibit a high prevalence of auditory hallucinations and delusions, with varying content, behavioral impact, and temporal occurrence. Significant associations and predictors of specific symptom domains were anticipated.

Methods: This prospective study included 230 Vietnamese patients diagnosed with paranoid schizophrenia according to ICD-10 criteria. Patients were assessed for the presence, content, behavioral impact, and temporal occurrence of auditory hallucinations, delusions, thought form disorders, mood disorders, volitional activity disorders, and negative symptoms using structured questionnaires. Associations between demographic, clinical, and symptom-related characteristics were analyzed using appropriate statistical methods, and multivariate linear regression identified independent predictors of specific symptom domains.

Results: Auditory hallucinations and delusions were highly prevalent, with commenting voices (79.1%) and persecutory delusions (87.0%) being the most common. The content of these symptoms was more likely unreal than real. Age, illness duration, and the number of auditory hallucinations were significantly correlated with specific symptom domains. The number of concurrent auditory hallucinations and illness duration emerged as independent predictors of mood disorders and negative symptoms, respectively.

Conclusion: This study provides novel insights into the clinical heterogeneity of paranoid schizophrenia in Vietnamese patients, highlighting the importance of considering interrelationships between symptom domains. Identifying specific predictors for mood disorders and negative symptoms underscores the need for targeted interventions in this population.

Key words: auditory hallucinations, delusions, paranoid schizophrenia, psychopathology, Vietnam

Introduction

Paranoid schizophrenia, a subtype of schizophrenia, is characterized by prominent delusions and hallucinations, often accompanied by a range of other symptoms (Edition, 2013; Owen, Sawa, & Mortensen, 2016). Despite extensive research, the factors contributing to the heterogeneity of clinical presentations in paranoid schizophrenia remain poorly understood (Tandon, Nasrallah, & Keshavan, 2009).

Previous studies have investigated the prevalence and characteristics of various symptoms in schizophrenia, including auditory hallucinations (Hugdahl & Sommer, 2018), delusions (Freeman, 2007), thought form disorders (Roche, Creed, MacMahon, Brennan, & Clarke, 2015), mood disorders (Upthegrove, Marwaha, & Birchwood, 2017), volitional activity disorders (Foussias & Remington, 2010), and negative symptoms (Kirkpatrick, Fenton, Carpenter, & Marder, 2006). However, most studies have focused on schizophrenia as a broad diagnostic category, with limited research specifically addressing the clinical features and symptom profiles of paranoid schizophrenia (Potkin et al., 2020).

Furthermore, while some studies have explored the associations between demographic and clinical variables and specific symptoms in schizophrenia (Li, Ma, Wang, Yang, & Wang, 2016; Takahashi, 2013), there is a paucity of

research investigating the interrelationships between different symptom domains and their potential predictors in paranoid schizophrenia (Peralta & Cuesta, 2001). A better understanding of these associations and predictors could provide valuable insights into the underlying mechanisms of the disorder and inform the development of targeted interventions (Keefe & Fenton, 2007).

In Vietnam, schizophrenia is a significant public health concern, with a prevalence estimate of 0.47% (Vuong, Van Ginneken, Morris, Ha, & Busse, 2011). However, limited research has been conducted on the clinical characteristics and symptom profiles of paranoid schizophrenia in the Vietnamese population. Given the potential influence of cultural and healthcare system factors on the presentation and management of schizophrenia (Bauer et al., 2011), it is crucial to investigate the specific features of paranoid schizophrenia within the Vietnamese context.

The present study aimed to comprehensively characterize the clinical features of paranoid schizophrenia in a Vietnamese sample, focusing on the prevalence, content, behavioral impact, and temporal occurrence of auditory hallucinations and delusions, as well as the prevalence and characteristics of thought form disorders, mood disorders, volitional activity disorders, and negative symptoms. Additionally, we sought to investigate the associations between demographic, clinical, and symptom-related characteristics and to identify independent predictors of specific symptom domains in Vietnamese patients with paranoid schizophrenia.

We hypothesized that Vietnamese patients with paranoid schizophrenia would exhibit a high prevalence of auditory hallucinations and delusions, with varying content, behavioral impact, and temporal occurrence. We also expected to find significant associations between different symptom domains and demographic and clinical variables, as well as potential independent predictors of specific symptom categories.

Methods

Study Design and Participants

This prospective study included 230 Vietnamese patients with paranoid schizophrenia diagnosed according to the International Classification of Diseases, 10th Revision (ICD-10) criteria (Organization, 1992). Patients were recruited from the Department of Psychiatry at Military Hospital 103, Vietnam Military Medical University, between February 2017 and March 2018. The study sample included 156 male and 74 female patients, aged 13-63 years. Patients with severe physical illnesses, endocrine disorders, cardiovascular diseases, digestive diseases, respiratory diseases, brain injuries, epilepsy, mental retardation, drug addiction, or other psychiatric disorders were excluded from the study.

Diagnoses were established by experienced psychiatrists through clinical interviews, using the ICD-10 diagnostic criteria for research (Organization, 1992). The interviews were supplemented by a review of medical records and information provided by family members or caregivers.

Ethical Considerations

The study protocol was approved by the Ethics Committee of Vietnam Military Medical University (Decision No. 1143/QĐ-HVQY). All participants or their legal guardians provided written informed consent after receiving a detailed explanation of the study's purpose and procedures. For participants under 18 years of age, written assent was obtained in addition to parental consent. The study was conducted in accordance with the Declaration of Helsinki and the principles of Good Clinical Practice.

Measures

The presence, content, behavioral impact, and temporal occurrence of auditory hallucinations and delusions were assessed using a structured questionnaire based on the ICD-10 criteria (Organization, 1992) and the Psychotic Symptom Rating Scales (PSYRATS) (Haddock, McCarron, Tarrier, & Faragher, 1999). The PSYRATS consists of two subscales: the Auditory Hallucinations subscale (11 items) and the Delusions subscale (6 items). Each item is rated on a 5-point scale (0-4), with higher scores indicating greater severity (Haddock et al., 1999).

The prevalence and characteristics of thought form disorders, mood disorders, and volitional activity disorders were evaluated using the Scale for the Assessment of Positive Symptoms (SAPS) (Nancy C Andreasen, 1984) and the Scale for the Assessment of Negative Symptoms (SANS) (N. Andreasen, 1983). The SAPS assesses positive symptoms across four domains: hallucinations, delusions, bizarre behavior, and formal thought disorder (Nancy C Andreasen, 1984). The SANS assesses negative symptoms across five domains: affective flattening, alogia, avolition-apathy, anhedonia-asociality, and attention. Each item on both scales is rated on a 6-point scale (0-5), with higher scores indicating greater severity (N. Andreasen, 1983).

Negative symptoms were also assessed using the Brief Negative Symptom Scale (BNSS) (Kirkpatrick et al., 2006; Kirkpatrick et al., 2011), a 13-item scale that evaluates six domains: anhedonia, asociality, avolition, blunted affect, alogia, and lack of normal distress. Each item is rated on a 7-point scale (0-6), with higher scores indicating greater severity (Kirkpatrick et al., 2006; Kirkpatrick et al., 2011).

Statistical Analysis

Data were analyzed using SPSS 20.0 software. Categorical variables were expressed as frequencies and percentages and compared using the chi-square test, Fisher's exact test, or Cochran's Q test, as appropriate (Kay, Fiszbein, & Opler, 1987). Continuous variables were presented as mean ± standard deviation and compared using the Lilliefors-corrected Kolmogorov-Smirnov test. Associations between demographic, clinical, and symptom-related characteristics were assessed using Spearman's correlation analysis. Assumptions for each statistical test were checked, and appropriate non-parametric alternatives were used when necessary.

Multivariate linear regression analyses were performed to identify independent predictors of thought form disorders, mood disorders, volitional activity disorders, and negative symptoms. The assumptions of linearity, homoscedasticity, independence of errors, and normality of residuals were assessed for each model. A p-value < 0.05 was considered statistically significant. Bonferroni correction was applied to adjust for multiple comparisons where appropriate.

Results

General characteristics of study subjects

Our study included 230 patients with paranoid schizophrenia. The demographic and clinical characteristics of these patients differed significantly from the expected distributions in the general population (p < 0.001). We conducted a comprehensive analysis of the patients' symptoms, including auditory hallucinations, delusions, thought form disorders, mood disorders, volitional activity disorders, and negative symptoms (Table 1).

Table 1. Demographic and clinical characteristics of patients with paranoid schizophrenia (n = 230)

Characteristics	Value	p
Age, years (mean ± SD)	31.2 ± 10.9	< 0.001[#]
Gender, n (%)		
Male	156 (67.8)	< 0.001[$]
Female	74 (32.2)	
Education level, n (%)		
Primary school or lower	4 (1.7)	< 0.001[&]
Secondary school	41 (17.8)	
High school	71 (30.9)	
College or higher	114 (49.6)	
Obstetric history, n (%)		
Yes	3 (1.3)	< 0.001[$]
No	227 (98.7)	
Psychomotor developmental history, n (%)		
Delayed/abnormal	91 (39.6)	< 0.002[$]
Normal	139 (60.4)	
Duration of illness, years (mean ± SD)	4.6 ± 5.1	< 0.001[&]
Family history of mental disorders, n (%)		
Yes	27 (11.7)	< 0.001[$]
No	203 (88.3)	

SD: standard deviation; p values were determined using ([#]) Lilliefors-corrected Kolmogorov-Smirnov test, ([$]) Binomial Test, and ([&]) Chi-Square Test

Prevalence, content, impact of auditory hallucinations and delusions

We found that the most prevalent type of auditory hallucination was commenting voices (79.1%), followed by commanding voices (33.0%) and conversing voices (25.2%), with significant differences in prevalence (p < 0.001). Most patients experienced one (47.8%) or two (47.4%) concurrent auditory hallucinations, with a significant difference in the distribution of concurrent hallucinations compared to chance (p < 0.001). The content of commenting, commanding, and conversing voices was more likely to be unreal than real (p < 0.001). Commenting and conversing voices had a lower impact on behavior compared to other types of auditory hallucinations (p < 0.001). The majority of auditory hallucinations occurred intermittently (p < 0.001) (Table 2).

Table 2. Clinical characteristics of auditory hallucinations and delusions in patients with paranoid schizophrenia (n = 230)

Auditory Hallucinations			Delusions		
	n (%)	p		n (%)	p
Presence of auditory hallucinations			**Presence of delusions**		
Commenting voices	182 (79.1)		Delusions of reference	49 (21.3)	
Commanding voices	76 (33.0)		Persecutory delusions	200 (87.0)	
Conversing voices	58 (25.2)	< 0.001¥	Delusions of being followed	154 (67.0)	
Imperative voices	14 (6.1)		Thought broadcasting	29 (12.6)	
Thought echo	10 (4.3)		Delusions of being controlled	26 (11.3)	< 0.001¥
Number of concurrent auditory hallucinations			Grandiose delusions	10 (4.3)	
0	7 (3.0)		Bizarre delusions	6 (2.6)	
1	110 (47.8)	< 0.001&	Hypochondriacal delusions	3 (1.3)	
2	109 (47.4)		Delusions of invention	1 (0.4)	
≥ 3	4 (1.8)		Delusions of jealousy	1 (0.4)	
Content of auditory hallucinations (Real/Unreal)			**Number of concurrent delusions**		
Commenting voices	48 (26.2)/ 135 (73.8)	< 0.001$	0	4 (1.7)	
Commanding voices	17 (22.4)/ 59 (77.6)	< 0.001$	1	33 (14.3)	
Conversing voices	9 (15.5)/ 49 (84.5)	< 0.001$	2	136 (59.1)	< 0.001&
Imperative voices	5 (35.7)/ 9 (64.3)	0.424$	≥ 3	57 (24.9)	
Thought echo	4 (40.0)/ 6 (60.0)	0.754$	**Behavioral impact of delusion (Yes/No)**		
Behavioral impact of auditory hallucinations (Yes/No)			Delusions of reference	17 (34.7)/ 32 (65.3)	0.044$
Commenting voices	49 (26.9)/133 (73.1)	< 0.001$	Persecutory delusions	61 (30.5)/ 139 (69.5)	< 0.001$
Commanding voices	33 (43.4)/ 43 (56.6)	< 0.001$	Delusions of being followed	42 (27.3)/ 112 (72.7)	< 0.001$
Conversing voices	15 (25.9)/ 43 (74.1)	< 0.001$	Thought broadcasting	7 (24.1)/ 22 (75.9)	0.008$
Imperative voices	10 (71.4)/ 4 (28.6)	0.180$	Delusions of being controlled	10 (38.5)/ 16 (61.5)	0.327$
Thought echo	2 (20.0)/ 8 (80.0)	0.109$	Grandiose delusions	4 (40.0)/ 6 (60.0)	0.754$
Hallucination occurrence (Intermittent/Continuous)			Bizarre delusions	2 (33.3)/ 4 (66.7)	0.688$
Commenting voices	162 (89.0)/ 20 (11.0)	< 0.001$	Hypochondriacal delusions	2 (66.7)/ 1 (33.3)	1
Commanding voices	65 (85.5)/ 11 (14.5)	< 0.001$	Delusions of invention	0 (-)/ 1 (-)	-
Conversing voices	49 (84.5)/ 9 (15.5)	< 0.001$	Delusions of jealousy	0 (-)/ 1 (-)	-
Imperative voices	11 (78.6)/ 3 (21.4)	0.057$	**Delusion occurrence (Intermittent/ Continuous)**		
Thought echo	8 (80.0)/ 2 (20.0)	0.109$	Delusions of reference	39 (79.6)/ 10 (20.4)	< 0.001$
			Persecutory delusions	176 (88.0)/ 24 (12.0)	< 0.001$
			Delusions of being followed	138 (89.6)/ 16 (10.4)	< 0.001$

Auditory Hallucinations			Delusions		
	n (%)	p		n (%)	p
			Thought broadcasting	28 (96.6)/ 1 (3.4)	< 0.001$^\$$
			Delusions of being controlled	22 (84.6)/ 4 (15.4)	0.001$^\$$
			Grandiose delusions	9 (90.0)/ 1 (10.0)	0.021$^\$$
			Bizarre delusions	6 (100)/ 0 (0)	0.031$^\$$
			Hypochondriacal delusions	2 (66.7)/ 1 (33.3)	1
			Delusions of invention	1 (-)/ 0 (-)	-
			Delusions of jealousy	1 (-)/ 0 (-)	-

p values were determined using (¥) Cochran's Q test, (&) Chi-square goodness of fit, and ($) Binomial Test, (-) Omitt

Persecutory delusions were the most common type of delusion (87.0%), followed by delusions of being followed (67.0%) and delusions of reference (21.3%), with significant differences in prevalence (p < 0.001). The majority of patients experienced two or more concurrent delusions (p < 0.001). Persecutory delusions, delusions of being followed, thought broadcasting, and delusions of reference had a significantly lower impact on behavior compared to other delusion types (p < 0.05). Most delusions occurred intermittently (p < 0.001) (Table 2).

Prevalence and characteristics of other symptoms and disorders
Our analysis of other disorders revealed that patients experienced a wide range of symptoms, with slow thinking (51.7%), depression (46.5%), abnormal movements (46.1%), and reduced work and study performance (96.5%) being the most common in their respective categories (p < 0.001). The vast majority of patients had impaired intelligence (98.7%, p < 0.001). On average, patients exhibited the highest number of negative symptoms, followed by volitional activity disorders, thought form disorders, and mood disorders (Table 3).

Table 3. Clinical characteristics of other disorders in patients with paranoid schizophrenia (n = 230)

Characteristics	n (%)	p
Prevalence of thought form disorders		
Slow thinking	119 (51.7)	
Interrupted thinking	45 (19.6)	
Tangential thinking	31 (13.5)	
Incoherent speech	29 (12.6)	
Soliloquy	29 (12.6)	< 0.001$^¥$
Poverty of speech	11 (4.8)	
Pathological reasoning	17 (7.4)	
Racing thoughts	8 (3.5)	
Word salad	5 (2.2)	
Circumstantial speech	1 (0.4)	
Intelligence		
Impaired	227 (98.7)	< 0.001$^&$
Normal	3 (1.3)	
Prevalence of mood disorders		
Depression	107 (46.5)	
Inappropriate	42 (18.3)	
Elation	37 (16.1)	
Ambivalence	26 (11.3)	< 0.001$^¥$
Blunted	10 (4.3)	
Influenced by delusions	7 (3.0)	
Influenced by hallucinations	6 (2.6)	
Apathy	3 (1.3)	
Prevalence of volitional activity disorders		
Abnormal movements	106 (46.1)	
Passive behavior	76 (33.0)	
Influenced by delusions	47 (20.4)	< 0.001$^¥$
Influenced by hallucinations	46 (20.0)	
Agitation	45 (19.6)	

Self-serving behavior	29 (12.6)	
Prevalence of negative symptoms		
Reduced work and study performance	222 (96.5)	
Aimless living	193 (83.9)	
Loss of interest	172 (74.8)	< 0.001¥
Self-absorption	80 (34.8)	
Avolition	62 (27.0)	

p values were determined using (¥) Cochran's Q test, (&) Chi-square goodness of fit

Associations between demographic, clinical, and symptom-related characteristics

We conducted a Spearman's correlation analysis to examine the relationships between demographic, clinical, and symptom-related characteristics. The analysis revealed significant positive associations between age ($p < 0.05$), duration of illness ($p < 0.01$), and negative symptoms total. The number of concurrent auditory hallucinations was positively correlated with mood disorders total ($p < 0.05$), while thought form disorders total showed positive correlations with volitional activity disorders total ($p < 0.05$) and negative symptoms total ($p < 0.01$). Mood disorders total and volitional activity disorders total were also positively correlated ($p < 0.01$) (Table 4)

Table 4. Spearman's correlation matrix of demographic, clinical, and symptom-related variables in patients with paranoid schizophrenia

Correlations	Age	Duration of illness, years	Number of concurrent auditory hallucinations	Number of concurrent delusions	Thought form disorders total	Mood disorders total	Volitional activity disorders total	Negative symptoms total
Age	1,000	**0,419****	-0,049	0,010	0,069	-0,027	-0,074	**0,140***
Duration of illness, years	**0,419****	1,000	0,077	0,062	0,074	-0,080	0,039	**0,189****
Number of concurrent auditory hallucinations	-0,049	0,077	1,000	0,095	-0,028	**0,133***	0,109	-0,073
Number of concurrent delusions	0,010	0,062	0,095	1,000	-0,107	-0,018	0,022	0,023
Thought form disorders total	0,069	0,074	-0,028	-0,107	1,000	-0,036	**0,132***	**0,197****
Mood disorders total	-0,027	-0,080	**0,133***	-0,018	-0,036	1,000	**0,203****	-0,120
Volitional activity disorders total	-0,074	0,039	0,109	0,022	**0,132***	**0,203****	1,000	-0,112
Negative symptoms total	**0,140***	**0,189****	-0,073	0,023	**0,197****	-0,120	-0,112	1,000

Spearman's correlation coefficient analysis with **. Correlation is significant at the 0.01 level (2-tailed), and *. Correlation is significant at the 0.05 level (2-tailed).

Independent Predictors of Symptoms and Disorders

Our multivariate linear regression analysis identified the number of concurrent auditory hallucinations as a significant independent predictor of mood disorders total ($\beta = 0.148$, 95% CI [0.007, 0.107], $p = 0.027$) and duration of illness as a significant independent predictor of negative symptoms total ($\beta = 0.186$, 95% CI [0.008, 0.062], $p = 0.012$).

No significant independent predictors were found for thought form disorders total or volitional activity disorders total (Table 5).

Table 5. Multivariate linear regression analysis of independent predictors for symptoms and disorders in patients with paranoid schizophrenia

Independent variables	Dependent variables β (95% CI), p			
	Thought form disorders total	Mood disorders total	Volitional activity disorders total	Negative symptoms total
Age	0.025 (-0.005, 0.008), p = 0.737	0.023 (-0.003, 0.004), p = 0.754	-0.110 (-0.015, 0.002), p = 0.143	0.089 (-0.005, 0.021), p = 0.224
Duration of illness, years	0.130 (-0.002, 0.026), p = 0.083	-0.080 (-0.010, 0.003), p = 0.286	0.047 (-0.012, 0.024), p = 0.529	0.186 (0.008, 0.062), **p = 0.012**
Number of concurrent auditory hallucinations	-0.024 (-0.128, 0.088), p = 0.713	0.148 (0.007, 0.107), **p = 0.027**	0.115 (-0.017, 0.264), p = 0.985	-0.1 (-0.375, 0.045), p = 0.123
Number of concurrent delusions	-0.107 (-0.169, 0.017), p = 0.107	-0.064 (-0.064, 0.022), p = 0.332	0.008 (-0.113, 0.128), p = 0.905	0.034 (-0.132, 0.228), p = 0.6

β, standardized regression coefficient; CI, confidence interval

Discussion

This study provides a comprehensive characterization of the symptom profiles and clinical correlates of paranoid schizophrenia in Vietnamese patients. The results highlight the high prevalence of auditory hallucinations and delusions, with commenting voices and persecutory delusions being the most common. Interestingly, the content of these symptoms was more likely to be unreal than real, and their behavioral impact varied across symptom types. Age, illness duration, and the number of concurrent auditory hallucinations emerged as significant correlates of specific symptom domains, with the latter two serving as independent predictors of mood disorders and negative symptoms, respectively.

The findings regarding the prevalence and characteristics of auditory hallucinations and delusions are consistent with previous research in other populations (Appelbaum, Robbins, & Roth, 1999; Chadwick & Birchwood, 1994; Hugdahl, 2009; McCarthy-Jones et al., 2014; Nayani & David, 1996; Sartorius et al., 1986). The high prevalence of these core symptoms underscores the need for targeted interventions, such as cognitive-behavioral therapy for psychosis (CBTp) (van der Gaag, Valmaggia, & Smit, 2014; Wykes, Steel, Everitt, & Tarrier, 2008). The presence of mood disorders, volitional activity disorders, and negative symptoms highlights the importance of a comprehensive treatment approach that extends beyond symptom management to improve overall functioning and quality of life (Mueser et al., 2015).

The significant associations between age, illness duration, and negative symptoms align with previous findings suggesting that negative symptoms tend to increase with age and chronicity (Möller, 2007; Patel et al., 2015). The relationship between auditory hallucinations and mood disorders is also consistent with the literature (Nayani & David, 1996; Yin et al., 2023), emphasizing the need to address affective disturbances in patients with psychosis. The interconnectedness of thought form disorders, volitional activity disorders, and negative symptoms suggests potential shared underlying mechanisms (N. C. Andreasen, Arndt, Alliger, Miller, & Flaum, 1995; Peralta & Cuesta, 2001).

The identification of the number of concurrent auditory hallucinations and illness duration as independent predictors of mood disorders and negative symptoms, respectively, has important clinical implications. These findings suggest that targeting auditory hallucinations and providing early intervention may help mitigate the impact of these symptoms on overall functioning and long-term outcomes (Birchwood, Todd, & Jackson, 1998; McGorry, Killackey, & Yung, 2008). Furthermore, the results underscore the need for comprehensive assessments and personalized treatment plans that consider the specific symptom profiles and predictors of clinical outcomes in patients with paranoid schizophrenia (van Os & Kapur, 2009).

The findings of this study should be interpreted in light of its limitations. The cross-sectional design precludes causal inferences, and the lack of a control group limits the ability to determine the specificity of the findings to paranoid schizophrenia. The reliance on self-reported data and the relatively small sample size for some less common symptoms may have introduced bias and reduced statistical power. Additionally, the multiple comparisons performed increase the risk of Type I errors, although efforts were made to adjust the significance level.

Conclusion

This study provides valuable insights into the symptom profiles and clinical correlates of paranoid schizophrenia in Vietnamese patients, emphasizing the need for a multidimensional approach to assessment and treatment. The findings highlight the importance of considering the interrelationships between symptom domains and the need for targeted interventions that address specific predictors of clinical outcomes. The results have important implications for clinical

practice, suggesting that personalized interventions targeting specific symptoms and predictors may improve outcomes for patients with this disorder. Mental health professionals should consider the interrelationships between symptom domains and tailor their approach accordingly. Future research should employ longitudinal designs, larger and more diverse samples, and more comprehensive assessment tools to further elucidate the complex interplay of symptoms and their impact on functioning in paranoid schizophrenia. Policymakers should prioritize resources for comprehensive care models that integrate pharmacological, psychosocial, and rehabilitative interventions for individuals with paranoid schizophrenia.

Author Contributions

HVD: Conceptualization, Methodology, Investigation, Formal analysis, Writing - Original Draft, Writing - Review & Editing. CTD: Conceptualization, Methodology, Supervision, Project administration, Writing - Review & Editing. AHT, TTD, HMN, LNH, LVN, KDN, HMTN: Investigation, Data Curation, Writing. All authors have read and agreed to the published version of the manuscript.

References

1. Andreasen, N. (1983). Scale for the assessment of negative symptoms (SANS) University of Iowa. *Iowa City, 10*.
2. Andreasen, N. C. (1984). Scale for the assessment of positive symptoms. *Psychiatrie & Psychobiologie*.
3. Andreasen, N. C., Arndt, S., Alliger, R., Miller, D., & Flaum, M. (1995). Symptoms of schizophrenia. Methods, meanings, and mechanisms. *Arch Gen Psychiatry, 52*(5), 341-351. doi:10.1001/archpsyc.1995.03950170015003
4. Appelbaum, P. S., Robbins, P. C., & Roth, L. H. (1999). Dimensional approach to delusions: comparison across types and diagnoses. *Am J Psychiatry, 156*(12), 1938-1943. doi:10.1176/ajp.156.12.1938
5. Bauer, S. M., Schanda, H., Karakula, H., Olajossy-Hilkesberger, L., Rudaleviciene, P., Okribelashvili, N., . . . Stompe, T. (2011). Culture and the prevalence of hallucinations in schizophrenia. *Compr Psychiatry, 52*(3), 319-325. doi:10.1016/j.comppsych.2010.06.008
6. Birchwood, M., Todd, P., & Jackson, C. (1998). Early intervention in psychosis. The critical period hypothesis. *Br J Psychiatry Suppl, 172*(33), 53-59.
7. Chadwick, P., & Birchwood, M. (1994). The omnipotence of voices. A cognitive approach to auditory hallucinations. *Br J Psychiatry, 164*(2), 190-201. doi:10.1192/bjp.164.2.190
8. Edition, F. (2013). Diagnostic and statistical manual of mental disorders. *Am Psychiatric Assoc, 21*(21), 591-643.
9. Foussias, G., & Remington, G. (2010). Negative symptoms in schizophrenia: avolition and Occam's razor. *Schizophr Bull, 36*(2), 359-369. doi:10.1093/schbul/sbn094
10. Freeman, D. (2007). Suspicious minds: the psychology of persecutory delusions. *Clin Psychol Rev, 27*(4), 425-457. doi:10.1016/j.cpr.2006.10.004
11. Haddock, G., McCarron, J., Tarrier, N., & Faragher, E. B. (1999). Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychol Med, 29*(4), 879-889. doi:10.1017/s0033291799008661
12. Hugdahl, K. (2009). "Hearing voices": auditory hallucinations as failure of top-down control of bottom-up perceptual processes. *Scand J Psychol, 50*(6), 553-560. doi:10.1111/j.1467-9450.2009.00775.x
13. Hugdahl, K., & Sommer, I. E. (2018). Auditory Verbal Hallucinations in Schizophrenia From a Levels of Explanation Perspective. *Schizophr Bull, 44*(2), 234-241. doi:10.1093/schbul/sbx142
14. Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull, 13*(2), 261-276. doi:10.1093/schbul/13.2.261
15. Keefe, R. S., & Fenton, W. S. (2007). How should DSM-V criteria for schizophrenia include cognitive impairment? *Schizophr Bull, 33*(4), 912-920. doi:10.1093/schbul/sbm046
16. Kirkpatrick, B., Fenton, W. S., Carpenter, W. T., Jr., & Marder, S. R. (2006). The NIMH-MATRICS consensus statement on negative symptoms. *Schizophr Bull, 32*(2), 214-219. doi:10.1093/schbul/sbj053
17. Kirkpatrick, B., Strauss, G. P., Nguyen, L., Fischer, B. A., Daniel, D. G., Cienfuegos, A., & Marder, S. R. (2011). The brief negative symptom scale: psychometric properties. *Schizophr Bull, 37*(2), 300-305. doi:10.1093/schbul/sbq059
18. Li, R., Ma, X., Wang, G., Yang, J., & Wang, C. (2016). Why sex differences in schizophrenia? *J Transl Neurosci (Beijing), 1*(1), 37-42.
19. McCarthy-Jones, S., Thomas, N., Strauss, C., Dodgson, G., Jones, N., Woods, A., . . . Sommer, I. E. (2014). Better than mermaids and stray dogs? Subtyping auditory verbal hallucinations and its implications for research and practice. *Schizophr Bull, 40 Suppl 4*(Suppl 4), S275-284. doi:10.1093/schbul/sbu018
20. McGorry, P. D., Killackey, E., & Yung, A. (2008). Early intervention in psychosis: concepts, evidence and future directions. *World Psychiatry, 7*(3), 148-156. doi:10.1002/j.2051-5545.2008.tb00182.x
21. Möller, H. J. (2007). Clinical evaluation of negative symptoms in schizophrenia. *Eur Psychiatry, 22*(6), 380-386. doi:10.1016/j.eurpsy.2007.03.010

22. Mueser, K. T., Penn, D. L., Addington, J., Brunette, M. F., Gingerich, S., Glynn, S. M., . . . Kane, J. M. (2015). The NAVIGATE Program for First-Episode Psychosis: Rationale, Overview, and Description of Psychosocial Components. *Psychiatr Serv, 66*(7), 680-690. doi:10.1176/appi.ps.201400413

23. Nayani, T. H., & David, A. S. (1996). The auditory hallucination: a phenomenological survey. *Psychol Med, 26*(1), 177-189. doi:10.1017/s003329170003381x

24. Organization, G. W. H. (1992). The ICD-10 Classification of Mental and Behavioural Disorders: Clinical descriptions and diagnostic guidelines. Retrieved from https://www.who.int/publications/i/item/9241544228

25. Owen, M. J., Sawa, A., & Mortensen, P. B. (2016). Schizophrenia. *The Lancet, 388*(10039), 86-97. doi:10.1016/S0140-6736(15)01121-6

26. Patel, R., Jayatilleke, N., Broadbent, M., Chang, C.-K., Foskett, N., Gorrell, G., . . . Stewart, R. (2015). Negative symptoms in schizophrenia: a study in a large clinical sample of patients using a novel automated method. *BMJ Open, 5*(9), e007619. doi:10.1136/bmjopen-2015-007619

27. Peralta, V., & Cuesta, M. J. (2001). How many and which are the psychopathological dimensions in schizophrenia? Issues influencing their ascertainment. *Schizophr Res, 49*(3), 269-285. doi:10.1016/s0920-9964(00)00071-2

28. Potkin, S. G., Kane, J. M., Correll, C. U., Lindenmayer, J.-P., Agid, O., Marder, S. R., . . . Howes, O. D. (2020). The neurobiology of treatment-resistant schizophrenia: paths to antipsychotic resistance and a roadmap for future research. *npj Schizophrenia, 6*(1), 1. doi:10.1038/s41537-019-0090-z

29. Roche, E., Creed, L., MacMahon, D., Brennan, D., & Clarke, M. (2015). The Epidemiology and Associated Phenomenology of Formal Thought Disorder: A Systematic Review. *Schizophr Bull, 41*(4), 951-962. doi:10.1093/schbul/sbu129

30. Sartorius, N., Jablensky, A., Korten, A., Ernberg, G., Anker, M., Cooper, J. E., & Day, R. (1986). Early manifestations and first-contact incidence of schizophrenia in different cultures. A preliminary report on the initial evaluation phase of the WHO Collaborative Study on determinants of outcome of severe mental disorders. *Psychol Med, 16*(4), 909-928. doi:10.1017/s0033291700011910

31. Takahashi, S. (2013). Heterogeneity of schizophrenia: Genetic and symptomatic factors. *Am J Med Genet B Neuropsychiatr Genet, 162b*(7), 648-652. doi:10.1002/ajmg.b.32161

32. Tandon, R., Nasrallah, H. A., & Keshavan, M. S. (2009). Schizophrenia, "just the facts" 4. Clinical features and conceptualization. *Schizophr Res, 110*(1-3), 1-23. doi:10.1016/j.schres.2009.03.005

33. Upthegrove, R., Marwaha, S., & Birchwood, M. (2017). Depression and Schizophrenia: Cause, Consequence, or Trans-diagnostic Issue? *Schizophr Bull, 43*(2), 240-244. doi:10.1093/schbul/sbw097

34. van der Gaag, M., Valmaggia, L. R., & Smit, F. (2014). The effects of individually tailored formulation-based cognitive behavioural therapy in auditory hallucinations and delusions: a meta-analysis. *Schizophr Res, 156*(1), 30-37. doi:10.1016/j.schres.2014.03.016

35. van Os, J., & Kapur, S. (2009). Schizophrenia. *The Lancet, 374*(9690), 635-645. doi:10.1016/S0140-6736(09)60995-8

36. Vuong, D. A., Van Ginneken, E., Morris, J., Ha, S. T., & Busse, R. (2011). Mental health in Vietnam: Burden of disease and availability of services. *Asian J Psychiatr, 4*(1), 65-70. doi:10.1016/j.ajp.2011.01.005

37. Wykes, T., Steel, C., Everitt, B., & Tarrier, N. (2008). Cognitive behavior therapy for schizophrenia: effect sizes, clinical models, and methodological rigor. *Schizophr Bull, 34*(3), 523-537. doi:10.1093/schbul/sbm114

38. Yin, Y., Tong, J., Huang, J., Tian, B., Chen, S., Tan, S., . . . Hong, L. E. (2023). Auditory Hallucinations, Depressive Symptoms, and Current Suicidal Ideation or Behavior Among Patients with Acute-episode Schizophrenia. *Arch Suicide Res, 27*(2), 323-338. doi:10.1080/13811118.2021.1993399