

Attitude toward Auditory Hallucinations among Schizophrenic Patients: Meta-Analytic Perspective

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ABSTRACT:

Background: Verbal auditory hallucinations are subjective phenomena or internal cognitive events. The auditory hallucination is misattributed by the schizophrenic patients to internal or external sources, which lead to deterioration in their psychosocial functioning, and lead to development of delusions, suicidal ideation and suicidal acts. There is a dearth of meta-analysis in the area of attitude toward auditory hallucinations among schizophrenic patients. **Aim:** Aim of the present meta-analysis was to undertake the first quantitative review of attitude toward auditory hallucinations among schizophrenic patients. **Methods:** PubMed, PsycINFO and ERIC databases were searched for reviews that examined the schizophrenic patients' ascription toward auditory hallucination. Nine studies were eligible for inclusion in the meta-analysis. **Results:** Schizophrenia patents have "malevolence" attribution, not "benevolence" attribution towards auditory hallucinations. Schizophrenic patients behaviourally resisted the auditory voices to prevent them. Schizophrenic patients did not have "engagement" feeling and "engagement" behaviour with auditory voices. Further evaluation is required to know about "resistance" feelings toward auditory hallucination among schizophrenic patients, because generated effect size (95% CI= 0.428-0.558, Z= -0.202, p>0.05) is in question. **Conclusions:** Schizophrenic patients attribute auditory hallucinations as wicked, and behaviorally attempt to prevent hallucinatory voices. Schizophrenic patients do not have view of engagement and they do not engage behaviorally with hearing voices.

Key words: Attitude, Auditory hallucination, Schizophrenia

INTRODUCTION

Hallucinations make up one of the central themes in the history of psychopathology. Jasper [1] has defined hallucination as "false perceptions which are not in any way distortions of real perceptions, but spring up on their own as something quite new and occur simultaneously with and alongside real perception". Hearing voices is, of course, core characteristic of schizophrenia [2, 3]. Phenomenologically auditory hallucination is the most common and important disorder of perception [4]. Recently, Baethge et al. estimated that the cross-sectional prevalence of hallucinations among inpatients with schizophrenia is 61.1% [3]. Prevalence of auditory hallucinations was present among 47% to 98% schizophrenic patients [5, 6, 7]. The prevalence of auditory hallucinations was found 64.3% in Indian schizophrenia samples [4].

Affect and behaviour arising from hallucinations may be understood as activating events, whose significance is appraised by the individual's belief system and which largely give rise to characteristic emotional and behavioural consequences; such as emotions of fear, guilt,

depression, sometimes elation, and the behaviour of appeasement [8, 9]. Attitude toward hallucinations, the emotional reaction to hallucinations, and the degree of control to cope with hallucinations, are also associated with social context [10].

Attribution for hallucinations in the 'schizophrenia' spectrum disorders have been subject to investigation. However, no meta-analysis has been reported in this intent. The aim of the present meta-analysis was to provide the first quantitative review of attitude toward auditory hallucinations among schizophrenic patients.

METHOD

Identification of studies

To identify relevant studies, we ran searches on PubMed, PsycINFO, and ERIC up to January 2012. We used the key words "attitude" or "attribution or belief" combined with "auditory hallucination" and "schizophrenia". Articles were retrieved for further assessment if the title or abstract suggested that reference will give sufficient information about attitude toward

auditory hallucinations among schizophrenic patients. Subsequently, relevant references were searched manually for full article.

Inclusion Criteria

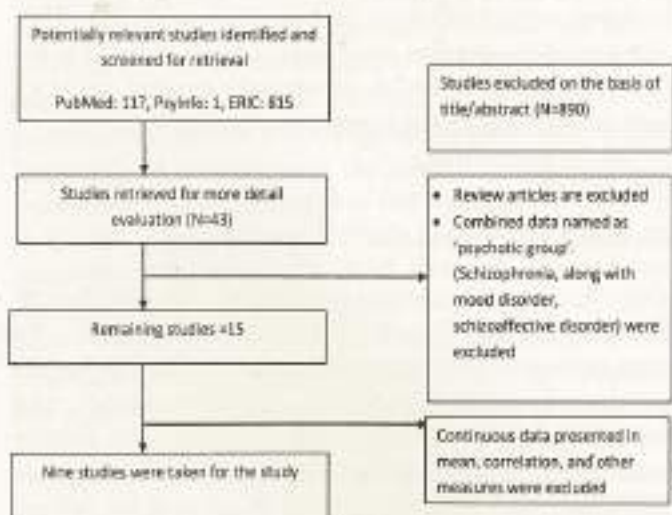
Manuscripts were included if they met the following criteria:

1. Inclusion of article of participants with schizophrenia according to ICD-10-DCR
2. In article data are presented on numbers or frequency
3. Entire article is in English

Review Search Strategy

The references search process has been done as recommended by the Quality of Reporting Meta Analysis (QUOROM) as shown in Figure-1 [11]. The initial search yielded 117 reference titles in PubMed, 1 in PsycINFO and 815 in ERIC. On the basis of title, abstract and full text, 43 titles were identified as having a possible relevance to know attitude toward auditory hallucinations among schizophrenic patients. Out of 43 references 28 were review studies and were left out from analysis. Studies, where data of schizophrenic group was merged with schizoaffective disorder and mood disorder and collectively termed as 'psychotic group', were excluded. Results of six other references were presented in mean, standard deviation and correlation format, and thus were excluded. Finally nine studies were included in present meta-analysis.

Figure 1: Flow chart (diagram) of studies included and excluded for Meta-Analysis as recommended by The Quality of Reporting of Meta Analysis (QUOROM) [11]



Data extraction and Selection procedure

Initially selected references were coded in the domains of year of publication, total number of patients included and the number of patients reporting a particular kind of attitude toward hallucination. Data presented in percentage was converted into numbers. Data presented in mean, standard deviation and correlations, cannot be converted in to numbers or frequencies and therefore were excluded from present meta-analysis. Included references were classified into six divisions according to classification given by Birchwood and Chadwick [8]. Classification of different domains for attitude toward hallucination is explained in Figure-2.

Figure-2

Parameter of attitude toward hallucination	Description
Benevolence	Voices are enhancing positive self concept, helping or protecting, having positive attitude, blessing, react positively and adjusting well with voices.
Malevolence	Voices are punishing, controlling, react negatively, had forced of command, abusing and threatening, poorly adjusted with voices.
Resistance Feeling	Negative feeling, makes me feel anxious, interrupting thinking process and suppression of voices in mind, feeling fear.
Resistance Behaviour	Do things to prevent voices, reluctant to obey the voices, negative and hostile reactions to stop it, resistance in work and self care.
Engagement Feeling	Voices entertain, positive companionship, express emotions, delusions as explanation, reassure me and debate the voices.
Engagement Behaviour	Voices enhance performance, do things to be contact with voices, engaged friendly, conversation, excessive religiosity due to voices, and take guidance.

Statistical Analysis

For conducting meta-analysis, a computer software Comprehensive Meta-Analysis (CMA) 2.0 version was used. In a systematic software review for meta-analysis, Bax et al. found that CMA 2.0 is identical, and it has only minor numerical inconsistencies [12]. CMA 2.0 scored

highest on usability and also had the most complete set of analytical features [12]. Statistical testing was carried out at the 5% level of significance (two-sided tests). Fixed effects model was used in meta-analysis because all the included references were conducted by different researchers, in different places, using different tools, and so forth [13].

RESULTS

Table -1: Characteristics of Benevolence Attribution of Auditory Hallucination among Schizophrenic Patients

Studies	Events	Sample Size	Event Rate (LL -UL)	Logit Event Rate	Standard Error	Z-Value	P-value	Event rate and 95%CI
Singh et al. 2002 [16]	53	75	0.667 (0.553-0.794)	0.893	0.245	2.838	0.005	
Ranjit et al. 2010 [18]	28	90	0.500 (0.387-0.613)	0.800	0.235	0.898	1.000	
Benjamin, 1989 [14]	10	14	0.714 (0.439-0.889)	0.816	0.592	1.548	0.121	
Garret, 2003 [20]	4	32	0.125 (0.048-0.288)	-1.846	0.535	-3.840	0.000	
Lowie, 1973 [21]	9	15	0.600 (0.348-0.808)	0.465	0.527	0.769	0.442	
Ransarathn, 1993 [15]	9	11	0.818 (0.493-0.954)	1.504	0.782	1.924	0.054	
Fallon et al. 1981 [19]	26	40	0.650 (0.482-0.791)	0.619	0.331	1.867	0.062	
Chadwick et al. 1994 [8]	12	29	0.414 (0.284-0.590)	-0.154	0.393	-0.392	0.695	
Chadwick et al. 2000 [17]	63	75	0.840 (0.764-0.925)	1.841	0.340	5.407	0.000	
Total full model (95% CI)	219	338	0.611 (0.554-0.665)	3.798	0.600			

Meta-analysis of references (Table 1) that applied for benevolence attitude toward auditory hallucinations among schizophrenic patients, achieved significant overall effect size (95% CI=0.175-0.272, Z= -8.813, p<0.001) indicates significant number of schizophrenic patients were not having benevolence attitude toward auditory hallucinations. All the references included in present meta-analysis [8, 14, 15, 16, 17, 18, 19, 20, 21] too reported that schizophrenic patients do not have benevolence attribution toward hallucinatory voices. However, the reported number of patients was not statistically significant in the study of Benjamin et al. [14].

The meta-analysis result of malevolence attitude toward auditory hallucinations is presented in Table 2. Overall generated effect size (95% CI= 0.554- 0.665, Z=3.798, p< 0.001) indicates significant number of schizophrenic patients had malevolence attitude toward auditory voices. Heterogeneity among findings of included references was found; some references [15, 16, 17]

reported that significant number of schizophrenic patients have malevolence attitude toward auditory hallucinations. Other included references [14, 18, 19, 21] in present meta-analysis also reported that schizophrenic patients have malevolence attribution toward voices; however, reported numbers of patients were not statistically significant in their findings. Contradictory findings were reported by Chadwick et al. [8] and Garret et al. [20].

Table -2: Characteristics of Malevolence Attribution of Auditory Hallucination among Schizophrenic Patients

Studies	Events	Sample Size	Event Rate (LL -UL)	Logit Event Rate	Standard Error	Z-Value	P-value	Event rate and 95%CI
Singh et al. 2002 [16]	53	75	0.667 (0.553-0.794)	0.893	0.245	2.838	0.005	
Ranjit et al. 2010 [18]	28	90	0.500 (0.387-0.613)	0.800	0.235	0.898	1.000	
Benjamin, 1989 [14]	10	14	0.714 (0.439-0.889)	0.816	0.592	1.548	0.121	
Garret, 2003 [20]	4	32	0.125 (0.048-0.288)	-1.846	0.535	-3.840	0.000	
Lowie, 1973 [21]	9	15	0.600 (0.348-0.808)	0.465	0.527	0.769	0.442	
Ransarathn, 1993 [15]	9	11	0.818 (0.493-0.954)	1.504	0.782	1.924	0.054	
Fallon et al. 1981 [19]	26	40	0.650 (0.482-0.791)	0.619	0.331	1.867	0.062	
Chadwick et al. 1994 [8]	12	29	0.414 (0.284-0.590)	-0.154	0.393	-0.392	0.695	
Chadwick et al. 2000 [17]	63	75	0.840 (0.764-0.925)	1.841	0.340	5.407	0.000	
Total full model (95% CI)	219	338	0.611 (0.554-0.665)	3.798	0.600			

Result of present meta-analysis for included studies of resistance feeling toward auditory hallucinations among schizophrenic patients is presented in Table 3. Overall generated effect size (95% CI= 0.428-0.558, Z= - 0.202, p>0.05) indicated that almost 50% patient reported having resistance feeling with voices and 50% not. Included reference [8, 14, 15, 18] documented that schizophrenic patients have resistance feelings toward auditory voices. However, findings of Chadwick et al. [8] and Benjamin et al. [14] were not statistically significant. Other included references [16, 19, 20, 21] reported that schizophrenic patients do not have resistance feeling with auditory voices; however, findings of Lowe [16] and Singh et al. [21] were not statistically significant.

Table -4: Resistance Behaviour for Auditory Hallucination among Schizophrenic Patients

Studies	Events	Sample Size	Event Rate (I.I -UI)	Logit Event Rate	Standard Error	Z-Value	P value
Singh, et al. 2002 [16]	16	75	0.213 (0.005-0.354)	1.277	0.275	4.650	0.000
Ranjana et al. 2010 [18]	10	51	0.196 (0.100-0.275)	0.425	0.302	1.405	0.160
Benjamin, 1989 [14]	12	14	0.857 (0.573-0.984)	1.792	0.764	2.348	0.019
Garret, 2003 [20]	5	32	0.156 (0.007-0.328)	-1.585	0.487	3.484	0.001
Lowe, 1973 [21]	18	15	0.667 (0.400-0.850)	0.993	0.648	1.255	0.205
Ramasubhan, 1983 [15]	8	11	0.727 (0.416-0.910)	0.901	0.677	1.488	0.147
Fallon et al. 1981 [19]	20	40	0.500 (0.300-0.841)	0.989	0.394	2.738	0.006
Chadwick et al. 1994 [8]	12	28	0.429 (0.284-0.600)	-0.154	0.383	-0.397	0.695
Total full model	154	283	0.634 (0.509-0.996)		3.939	0.000	

Meta-analysis for resistance behaviour toward auditory hallucination was presented in Table 4. Achieved overall generated effect size (95% CI=0.568-0.695, Z= 3.939, p<0.001) indicates that significant number of schizophrenic patients resist behaviourally in order to prevent auditory voices. Similar findings were documented in included references [14, 15, 16, 18, 19, 21]. However, findings of some references [15, 18, 21] were not statistically significant. Contradictory findings were reported by Chadwick et al. [8] and Garret et al. [20].

Meta-analysis for reported reviews of engagement feeling with auditory voices is presented in Table-5. Overall generated effect size (95% CI= 0.242-0.357, Z= - 6.099, p<0.001) indicates that significantly less number of schizophrenic patients had engagement feeling with auditory hallucinations. Similar findings were documented in included references [8, 14, 15, 16, 18, 19, 20]. However, in some references [8, 14, 18, 19] the reported number of patients was not statistically significant. Contradictory findings were reported by Lowe [21].

Table -5: Engagement Feelings for Auditory Hallucination among Schizophrenic Patients

Studies	Events	Sample Size	Event Rate (I.I -UI)	Logit Event Rate	Standard Error	Z-Value	P value
Singh, et al. 2002 [16]	14	75	0.187 (0.114-0.251)	-1.472	0.298	4.967	0.000
Ranjana et al. 2010 [18]	20	51	0.392 (0.275-0.540)	-0.405	0.288	1.405	0.160
Benjamin, 1989 [14]	4	14	0.286 (0.111-0.501)	-0.518	0.592	-1.545	0.121
Garret, 2003 [20]	8	32	0.250 (0.007-0.328)	-1.488	0.453	3.278	0.001
Lowe, 1973 [21]	9	15	0.600 (0.348-0.808)	0.492	0.527	0.768	0.442
Ramasubhan, 1983 [15]	2	11	0.182 (0.048-0.507)	-1.504	0.702	-1.924	0.054
Fallon et al. 1981 [19]	8	40	0.200 (0.125-0.378)	-1.237	0.379	-3.256	0.001
Chadwick et al. 1994 [8]	11	26	0.423 (0.252-0.615)	-0.219	0.297	-0.731	0.465
Total full model	70	283	0.256 (0.242-0.357)			-6.099	0.000

Meta-analysis for reviews that applied for schizophrenic patients' engagement behaviour with auditory hallucination is presented in Table 6. Achieved significant overall effect size (95% CI= 0.324- 0.477, Z= - 2.519, p<0.05) indicates significantly less number of schizophrenic patients engaged behaviourally with auditory hallucinations. The findings of the present meta-analysis were homogenous with results which were also reported in included references [14, 15, 16, 18, 19, 21]. Contradictory findings were reported by Chadwick et al. [8] and Garret et al. [20].

Table -6: Engagement Behaviour for Auditory Hallucination among Schizophrenic Patients

Studies	Events	Sample Size	Event Rate (I.I -UI)	Logit Event Rate	Standard Error	Z-Value	P value
Singh, et al. 2002 [16]	2	75	0.027 (0.007-0.100)	-3.597	0.717	-5.019	0.000
Ranjana et al. 2010 [18]	16	60	0.267 (0.206-0.490)	-0.754	0.303	-2.486	0.013
Benjamin, 1989 [14]	2	14	0.143 (0.036-0.427)	-1.702	0.764	-2.346	0.019
Garret, 2003 [20]	28	32	0.875 (0.711-0.950)	1.546	0.535	3.640	0.000
Lowe, 1973 [21]	13	15	0.867 (0.505-0.988)	1.872	0.768	2.484	0.014
Ramasubhan, 1983 [15]	2	11	0.182 (0.048-0.507)	-1.504	0.702	-1.924	0.054
Fallon et al. 1981 [19]	14	40	0.350 (0.215-0.508)	-0.515	0.331	-1.567	0.062
Chadwick et al. 1994 [8]	14	26	0.538 (0.366-0.718)	0.104	0.393	0.263	0.795
Total full model	91	283	0.308 (0.324-0.477)			-2.519	0.012

DISCUSSION

The present meta-analysis extends the earlier individual research findings in terms of size (263-338 patients) of database analysis. Different cognitive models have suggested that dysfunctional attribution toward auditory hallucinations occur as the result of internal events attributed to an external source [22], meta cognition [23, 24, 25] and reduced attention [26]. In the midst of the rationale of different cognitive models, this meta-analysis has been carried out.

The majority of schizophrenic patients do not have benevolence attribution toward auditory hallucinations. Similarly, previous studies which were not included in present meta-analysis have also reported that very few voice hearers constructed voices as benevolent and majority of voice hearers perceive voices as persecuting them, and voices were out to gain control of them [9]. Overall schizophrenic patients perceive voices as powerful and omnipotent [27].

Inconclusive findings were found by us in the area of resistance feeling toward auditory hallucinations among schizophrenic patients. Other previous research studies, not included in present meta-analysis, have reported that the occurrence of hallucinations were related to the appearance of intrusive thoughts associated with anxiety, meta-cognitive beliefs concerning low self-confidence in one's own judgments and beliefs [24]. However, Qulis et al. have also concluded that auditory hallucinations give negative emotional and behavioural impact on schizophrenic patients; and have also found similar trend of negative correlation between auditory hallucinations and supportiveness and mood enhancing effect of the hallucination [28]. Schizophrenic patients resist behaviourally in order to prevent auditory voices. Findings of present meta-analysis are consistent with other previous researches [29, 30, 31]; who have also reported 60% to 94% schizophrenic patients using resistance behaviour to cope with hallucinations.

Schizophrenic patients do not have feelings of engagement with auditory hallucinations. Findings of the present meta-analysis are similar to that of Brichwood and Chadwick; who have reported that more than two third of the voice hearers were at least moderately depressed, which may be directly attributable to the interpersonal appraisal to power and entrapment by the voices [9]. Schizophrenic patients also don't show engagement behaviour with auditory hallucinations. The findings of present meta-analysis are similar to that of Sanjuan, et al. [32], who have also concluded that negative associations were found with intensity of distress and

negative content with auditory voices attributed by schizophrenic patients.

We used only published data for present meta-analysis, which is a methodological limitation, along with limited detection of heterogeneity across studies and validity of results. Small sample size in some included studies also undermines the statistical power of this meta-analysis [13].

CONCLUSIONS

The meta-analysis of nine methodologically sound studies, according to our inclusion and exclusion criteria, has shown that the schizophrenic patients have malevolence attitude toward auditory hallucinations. Resistance feeling toward auditory hallucinations among schizophrenic patients is still a question but behaviourally they resist hallucinatory voices. Schizophrenic patients do not have feelings of engagement with auditory hallucinations and they do not engage themselves behaviourally with auditory hallucinations.

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