

# A cross-sectional, non-interventional study of the correlation between insight and adherence in schizophrenia in Nepal

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## Research article

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# Abstract

**Background:** There is a significant lack of research in the Nepalese study population on adherence in patients with schizophrenia. This cross-sectional, non-interventional study aims to re-examine the recognised correlation between insight and adherence in this population, whilst exploring the association between patient demographics and adherence to help bring understanding to how familial and environmental factors may impact adherence.

**Methods:** Patients were recruited upon attendance to outpatient's appointments and admission to the psychiatry department of Manipal Teaching Hospital. A self-report questionnaire was used to collect data on patient demographics, including age, ethnicity, religion, employment status, current living arrangements and education level; the Birchwood Insight Scale (BIS); and the Drug Attitude Inventory (DAI-10) score. Descriptive statistics on the demographics, BIS and DAI-10 were collated using SPSS. An analysis of variance of DAI-10 scores according to participant demographics was performed using a one-way ANOVA analysis. Correlation between the BIS and BIS subscales and the DAI-10 was tested using Pearson's 2-tailed analysis at 0.01 significance level.

**Results:** 19 participants consented to participate in this study with 100% data obtained. 57.9% unemployed, 63.2% living with parents and 47.4% had only a basic education. 36.8% of participants had poor insight; 84.2% of participants had poor insight into their symptoms; 78.9% of participants had poor insight into their illness and 36.8% had poor insight into their need for treatment. 52.7% of participants were poor adherers. No significant differences in DAI-10 scores were found between demographic groups. A positive correlation was found between the total BIS score and DAI-10 score (Pearson correlation coefficient of 0.585; P value = 0.009). Furthermore, the awareness of need for treatment subscale score and the DAI-10 score found a correlation coefficient of 0.609 (P value = 0.006).

**Conclusions:** In conclusion, this study found prevalent non-adherence to medication and demonstrated that insight correlates with adherence. Although study findings did not suggest that patient demographics were associated with non-adherence, it is important to consider the possibility that these high rates of non-adherence have other contributing factors; overcoming rural health inequality, cultural beliefs regarding psychiatric illness and unaffordability remain the great challenges for the Nepalese population.

## Background

Schizophrenia is psychiatric condition that cause hallucinations, delusions, thought disorder and paranoia; thought to affect about 3 in 1000 adults globally [1]. Schizophrenia is a treated using a combination of cognitive behavioural therapy and anti-psychotic medication, however non-adherence to treatment can make the optimal delivery of these treatments challenging and is recognised as the greatest barrier in the delivery of treatment for this patient population [2,3]. A cross-sectional analysis of 50 patients with schizophrenia performed by Chaudhari *et al.* in 2017, showed that 52% of patients in the

study were low adherers [4]. In a 2019 study of schizophrenia and bipolar disorder patients, Lee *et al.* demonstrated rates of non-adherence at 26.4% 4-weeks post discharge and 37.7% 24-weeks post hospital discharge [5]. Non-adherence to treatment in patients with schizophrenia is a risk factor for relapse, hospitalisation and suicide and it is thought that poor insight may be the leading cause for non-adherence [6]. A multicentre study by Tessier *et al.* demonstrated that medication adherence was directly predicted by insight [7]. Bitter *et al.* presented a study concluding a strong association between insight and compliance, adding further evidence to this hypothesis [8].

Non-compliance to medication is a huge challenge facing Nepalese healthcare, especially when treating psychiatric illness. Non-compliance in the Nepalese population has many contributing factors, including beliefs regarding psychiatric illness, migration, lack of access to nearby treatment, forgetting doctor's appointments, use of faith healers, social stigma, substance misuse, insight, unaffordability and more [9, 10]. A study by Dhungana *et al.* found that out of 80 cases of non-compliant patients with schizophrenia, 72.5% had lack of access to nearby treatment [9]. In a study by Ghimire, unaffordability was found to be a factor in 68% of cases of poor compliance, whereas poor insight was only found to be a factor in 2% of cases [10].

The rationale for the study is to investigate adherence in patients with schizophrenia in a Nepalese study population where there is currently a significant lack of research. This study hopes to further test the hypothesis that there is a positive correlation between insight and adherence. This study will explore how differing variants of insight in schizophrenia patients may affect adherence. Furthermore, this study will endeavour to explore the association between patient demographics and adherence to help bring understanding to how familial, socio-cultural and environmental factors may impact on adherence.

## Methods

### Study Overview

This is a cross-sectional, non-interventional study. Patients were recruited upon attendance to outpatient's appointments and admission to the psychiatry department of Manipal Teaching Hospital. Recruitment and participation in the study was completed between 10<sup>th</sup> May 2019 and 10<sup>th</sup> June 2019. Self-reported data collected included patient demographics, including age, ethnicity, religion, employment status, current living arrangements and education level; the Birchwood Insight Scale (BIS) [11]; and the Drug Attitude Inventory (DAI-10) score [12,13]. The DAI-10 was chosen for its simplicity and good psychometric properties; it is considered just as valid in the measurement of insight in schizophrenia as the DAI-30 [14]. This data was collected to explore the correlation between insight and adherence in schizophrenia; demographic data will be used for a variance analysis to observe for the effect of demographics on adherence. Potential confounders of adherence in this population include consulting a faith healer, complexity of drug regime, side effects, duration of illness and drug and alcohol misuse [9, 10].

## Inclusion and Exclusion Criteria

This study recruited patients upon attendance to outpatient appointments or admission to the psychiatric department at Manipal Teaching Hospital in Pokhara, Nepal. Inclusion criteria for the study were a diagnosis of schizophrenia in accordance to ICD–10 disease classification; aged 18 years or over and written consent to the study. Exclusion criteria were acute psychosis or patients with any cognitive deficits which would interfere with their ability to comprehend the questionnaire.

## Measures

Insight was assessed by the Birchwood Insight Scale (BIS); this measure can explore a participant's awareness of illness, awareness of need for treatment and understanding of symptoms as pathological [11]. BIS is an 8-item self-report scale; the total score from these 8 items can be used to determine the level of insight; 12 indicating full insight, 9 indicating good insight and 0 indicating no insight [11]. BIS subsequently offers a subscale analysis, this can be used to determine awareness of symptoms, awareness of illness and awareness of need for treatment [11].

Adherence was assessed using the Drug Attitude Inventory (DAI–10); this adherence scale was first developed by Hogan *et al.* in 1983 and has since been condensed by a stepwise discriminant analysis by Awad *et al.* in 1993 to form a 10-question adherence scale [12, 13]. This self-report questionnaire asks the participant about the perceived effects of anti-psychotic drugs. If the patient answers in accordance with how an adherent patient would answer, they receive +1 point for the question. If the patient answers in accordance with how a non-adherent patient would answer, they receive –1 point for the question. Subsequently, the total score for the questionnaire directly correlates to a patient's drug attitude, 0 being a very poor attitude and 10 being the best possible drug attitude [12, 13].

## Data Collection

A structured self-report questionnaire was used to collect the data; each questionnaire composed of three sections (section 1: demographics; section 2: Birchwood Insight Scale and section 3: DAI–10) [11–13]. The questionnaire was designed in English and translated to Nepali by the staff of Manipal Teaching Hospital Library. Data was collected by Imogen Stokes (British Medical Student) and Dr Uddhav Lama (First Year Resident Psychiatrist at Manipal Teaching Hospital) between 10<sup>th</sup> May 2019 and 10<sup>th</sup> June 2019. Patients were enrolled consecutively into the study. Data was collected and anonymised using a participant number to ensure confidentiality; data was collated in Microsoft Excel using the anonymised participant number.

For illiterate participants, the questionnaire could be read to them by Dr Uddhav Lama, he did not explain or expand upon the questions in any way, but simply repeated the questions if the participants needed;

this method reduced opportunity for observer bias. All patients eligible for the study that presented at Manipal Teaching Hospital were invited to participate, as to remove selection bias from the study.

Study size was determined by the time scale available to perform the study. Imogen Stokes (British Medical Student) was placed at Manipal Teaching Hospital between the 6<sup>th</sup> May 2019 and 10<sup>th</sup> June 2019, one week was used for preparation and translation of resources and data collection began on the 10<sup>th</sup> May 2019.

## Data Processing and Analysis

Data was collated in Microsoft excel and subsequently analysed using SPSS version 24. Descriptive statistics of the demographics, BIS and DAI-10 were collated using SPSS. An analysis of variance of DAI-10 scores according to participant demographics was performed using a one-way ANOVA analysis. Correlation between the BIS and BIS subscales and the DAI-10 was tested using Pearson's 2-tailed analysis at 0.01 significance level.

## Ethical Consideration

Ethical approval was obtained from the Institutional Ethical Review Committee. In line with the Extracts of Nepal Health Research Council (NHRC) Regulations 2002, the research project was responsive to the health needs and priorities of Nepal and was sensitive to the existing cultural and social values [15]. An informed written consent was obtained from the participants. Confidentiality was maintained by removing patient identifiable information.

## Results

### Sample

19 patients were considered for the study, examined for eligibility and subsequently invited to participate in the study. 19 participants were consented to participate in this study with 100% data obtained on demographics, BIS and DAI-10.

52.6% of participants were aged between 21–30 years old; 52.6% were male; 31.6% Bahun ethnic group and 26.3% Chhetri ethnic group; 63.2% Hindu and 36.8% Buddhist; 57.9% unemployed; 63.2% living with parents; and 47.4% had basic education and 47.4% had a higher secondary education (Table 1).

### Birchwood Insight Scale (BIS)

Across the 19 participants in the study, there was a mean BIS score of 8.79 (SD 3.95). 36.8% of participants had full insight (BIS score  $\geq 12$ ); 26.3% of participants had good insight (BIS score  $\geq 9$ );

36.8% of participants had poor insight (BIS score  $\geq 1$ ) and 0.0% of participants had no insight (BIS score of 0) (Table 2).

Upon analysis of the awareness of symptoms subscale, it was found that the mean score across the 19 participants was 2.32 (SD 0.75). 15.7% of participants had good insight into their symptoms and 84.2% of participants had poor insight into their symptoms. Upon analysis of the awareness of illness subscale, it was found that the mean score across the 19 participants was 1.63 (SD 1.46). 21.1% of participants had good insight into their illness and 78.9% of participants had poor insight into their illness. Upon analysis of the awareness of need for treatment subscale, it was found that the mean score across the 19 participants was 2.42 (SD 1.74). 63.2% of participants had good insight into their need for treatment and 36.8% had poor insight into their need for treatment (Table 2).

## **Drug Attitude Inventory (DAI-10)**

Across the 19 participants in the study, there was a mean DAI-10 score of 1.05 (SD 3.85). 47.4% of participants had a positive score, indicating a positive drug attitude; 21.1% of participants had a score equal to zero, indicating a poor drug attitude; 31.6% of participants had a negative score, indicating a negative drug attitude (Table 2).

## **Demographics and Adherence**

Results of the one-way ANOVA analysing for variance in DAI-10 scores according to participant demographics found no significant differences in DAI-10 scores between demographic groups (Table 3).

## **Insight and Adherence**

Pearson 2-tailed analysis for correlation between the 19 participants' scores in the BIS and the DAI-10 found a Pearson correlation coefficient of 0.585 (P value = 0.009), indicating statistically significant positive correlation between the BIS scores and DAI-10 scores of the 19 participants (Table 4).

The awareness of symptoms subscale scores and DAI-10 scores found a correlation coefficient of 0.032 (P value = 0.895), indicating non-significant positive correlation. Similarly, awareness of illness subscale scores and DAI-10 scores found a correlation coefficient of 0.112 (P value = 0.647), indicating non-significant positive correlation. However, the awareness of need for treatment subscale scores and the DAI-10 scores found a correlation coefficient of 0.609 (P value = 0.006), indicating statistically significant positive correlation (Table 4).

## **Discussion**

This cross-sectional, non-interventional study of patients with schizophrenia at Manipal Teaching Hospital in Nepal had many findings of importance. Notably, 52.7% of participants had a poor or negative drug attitude as assessed by the DAI-10, predicting poor adherence (non-adherence) to medication. This is in keeping with the existing literature that states that approximately 50% of patients with schizophrenia show non-adherence in the course of treatment [16, 17]. Existing literature from similar Nepalese study populations have similar findings, one study from Poudel *et al.* found 37.3% of patients missed to take their medication and nearly two thirds of them sometimes missed their medication [18]. A study from Chaudhari *et al.* in an Indian study population found 52% of patients to be non-adherers [4].

Adherence to medication is affected by many factors, in Nepalese study populations it is recognised that availability and affordability of healthcare, alongside culture and beliefs of the patients can greatly affect compliance to medication [9, 10]. This study found no significant variance in adherence between demographic groups, irrelevant of employment status, education or living arrangements. This contradicts existing literature that illiteracy and poor education are associated with poor medication adherence in schizophrenia [19, 20]. Furthermore, in a study from Ghimire *et al.*, unaffordability was cited as contributing factor for 68% of non-compliant patients with schizophrenia [10].

This study found that 52.6% of participants had only a basic education, reflecting findings published in 2013, that only 60.3% of Nepalese people ages 15 and above can, with understanding, both read and write a short, simple sentences [21]. It was found that 57.9% of participants were unemployed; previous studies on similar cohorts have found unemployment rates as high as 86.7% [22]. A study from Liu *et al.* explores the hypothesis that illiterate people frequently experience social exclusion and this social adversity may increase risk of schizophrenia, it was found that illiterate participants were 2.08 times more likely to develop schizophrenia than the literate participants with no school education [23]. This is in keeping with the social defeat hypothesis which suggests long-term exposure to social defeat leads to sensitisation of mesolimbic dopamine system, thus increasing the risk of schizophrenia [24]. It is well recognised that rates of schizophrenia are higher amongst the unemployed and uneducated [25, 26]. Alongside the social defeat hypothesis, it is important to consider how negative symptoms and stigma may affect the equal opportunity of employment and education for this patient population. The majority of Nepalese people continue to believe schizophrenia is caused by bad fortune, some believing it is the result of previous sins, evil spirits, witchcraft and black magic; this negative stigma attached to schizophrenia within Nepalese culture is recognised to leave this patient group feeling rejected from society and increase difficulty in gaining education and employment [27, 28, 29]. Furthermore, it is understood that cognitive dysfunction and negative symptoms associated with schizophrenia are significantly associated with unemployment [30].

Approximately 30–50% of patients with schizophrenia have lack of insight into their condition, however the nature of insight is poorly defined across psychiatric literature [31, 32]. Insight is multidimensional and is related to awareness of illness, awareness of symptoms and understanding of need for treatment [11]. 36.8% of participants in this study population had poor insight, awareness of symptoms receiving the lowest score out of the three subscales closely followed by awareness of illness, with 84.2% of

participants demonstrating poor awareness of symptoms and 78.9% demonstrating poor awareness of illness. It is understood that awareness of symptoms and illness is often greatly affected in schizophrenia as patients have a reduced capacity for self-reflectivity and self-awareness [33, 34].

Adherence is a significant problem in all patient populations in Nepal; a study from Bhandari *et al.* found adherence to antihypertensives at 56.5% [35]. Unaffordability and difficulty travelling to the nearest hospital are commonly associated with non-adherence, this is equally true from the treatment of schizophrenia to tuberculosis [36]. However, in comparison to other chronic illnesses, schizophrenia can reduce one's ability to understand the importance of taking medication and the relationship between taking medication and reduced symptom burden. Insight is recognised to strongly correlate with adherence, with delusional patients often being the poorest adherers [37]. This study substantiates this hypothesis, analysis found that insight positively correlated with adherence, also finding that awareness of need for treatment correlated with adherence. Although there is a clear association between insight and adherence, it would be an assumption to say that lack of insight is causative of non-adherence in these patients, as there are many other factors that could be contributing to the outcome of non-adherence [9, 10, 31].

Although this hypothesis has been demonstrated previously, there is a significant lack of research in the Nepalese patient population; a PubMed search of "schizophrenia Nepal" brings only 31 results. This study evidences that insight and adherence are correlated, despite significant familial, socio-cultural and environmental factors impacting on adherence in this study population. The study design was robust as the Birchwood Insight Scale (BIS) and Drug Attitude Inventory (DAI-10) are well recognised and validated scales for measuring insight and adherence, respectively [11, 12, 12, 14]. The questionnaire was translated excellently; the simplicity of the questionnaire ensured easy completion for the patients with 100% data collection.

Limitations to this study included small sample size ( $n = 19$ ), which reduces the external validity of the study. The patient population examined in this study may not be representative of all patients with schizophrenia across the Nepal, as Manipal Teaching Hospital is a private hospital based in a major city, Pokhara. Lack of accessibility for the rural Nepalese people may have limited their presentation to this outpatient department, and it is these rural Nepalese people that have the highest illiteracy rates and poorest living conditions, factors known to be associated with adherence [19, 20, 38]. Upon reflection with a better understanding of the Nepalese population, the demographics section of the questionnaire should have measured illiteracy rates. Some literature suggests that up to 68% of patients with schizophrenia in Nepal consult a faith healer, further enquiries into the use of a faith healer would have enabled a deeper understanding of how this variable affected adherence [39]. Questions could have been added to the questionnaire on complexity of drug regime, side effects, duration of illness and drug and alcohol misuse, as these factors are all recognised to affect adherence [40, 41, 42].

## Conclusions

In conclusion, this cross-sectional, non-interventional study of patients with schizophrenia in Western Nepal found prevalent non-adherence to medication and evidenced that insight correlates with adherence in a population where this had not been evidenced previously. Although study findings did not suggest that patient demographics were associated with non-adherence, it is important to consider the possibility that these high rates of non-adherence have other contributing factors. The subjective experience of implementing this study, has clearly highlighted the lack of funding within the Nepalese healthcare system, especially within psychiatry. Less than 3% of the national budget is allocated to the health sector, of which 1% of the health budget is spent on mental health, furthermore there is no mental health act and the National Mental Health Policy formulated in 1997 is yet to be fully operational [43, 44]. Although most Nepalese people continue to hold negative beliefs about psychiatric conditions, such as schizophrenia, there is now an emerging body of literature from Nepal discussing the felt-stigma for psychiatric patients and the merit of anti-stigma campaigns moving forward [27, 29]. Although lack of insight may limit a patient's ability to make the decision to adhere to treatment; overcoming rural health inequality, cultural beliefs regarding psychiatric illness and unaffordability remain the great challenges.

## Abbreviations

*BIS*—Birchwood Insight Scale

*DAI-10* Drug Attitude Inventory (10 question scale)

*DAI-30* - Drug Attitude Inventory (30 question scale)

## Declarations

*Ethics approval and consent to participate:* Ethical approval was obtained from the Institutional Ethical Review Committee of Manipal College of Medical Sciences, Pokhara, Nepal. An informed written consent was obtained from all participants capable of ethical consent. Some participants were not capable of providing ethical consent for their participation, in these circumstances a legal guardian or representative provided consent to participate on their behalf.

*Availability of data and materials:* The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

*Competing interests:* The authors declare that they have no competing interests.

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*Authors:* IS was involved in data collection between 10<sup>th</sup> May 2019 and Friday 31<sup>st</sup> May; conducted all data interpretation and wrote the manuscript. UL (First Year Resident Psychiatrist at Manipal Teaching Hospital) was involved in data collection between 10<sup>th</sup> May 2019 and 10<sup>th</sup> June 2019; provided

translation during consultations for IS and reviewed the manuscript. JHK (Head of Psychiatry Department at Manipal Teaching Hospital) was supervisor for the project providing guidance, support and enabling ethical approval of the study. All authors read and approved the manuscript.

*Consent for publication:* Written consent to publish this information was obtained from the Institutional Ethical Review Committee of Manipal College of Medical Sciences, Pokhara, Nepal. A full waiver of the article processing charge was approved by Springer Nature waivers team.

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## Tables

**Table 1 - Demographics of study sample (n=19)**

<b>Demographics</b>	<b>Study Population (n=19)</b>
<b>Gender</b>	
N Total	19
Male	10 (52.6%)
Female	9 (47.4%)
<b>Age Category</b>	
N Total	19
18-20	3 (15.8%)
21-30	10 (52.6%)
31-40	2 (10.5%)
41-50	3 (15.8%)
51-60	1 (5.3%)
+60	0 (0.0%)
<b>Ethnicity</b>	
N Total	19
Chhetri	5 (26.3%)
Bahun	6 (31.6%)
Magar	2 (10.5%)
Tamang	3 (15.8%)
Other	3 (15.8%)
<b>Religion</b>	
N total	19
Hindu	12 (63.2%)
Buddhist	7 (36.8%)
Other	0 (0.0%)
<b>Employment Status</b>	
N Total	19
Full Time Employment	2 (10.5%)
Casual Employment	1 (5.3%)
Student	4 (21.1%)
Carer of a dependent	1 (5.3%)
Unemployed	11 (57.9%)
<b>Living Arrangements</b>	
N Total	19
Living with parents	12 (63.2%)
Home owner	6 (31.6%)
Renting	0 (0.0%)
Other	1 (5.3%)
<b>Education</b>	
N Total	19
Basic Education	10 (52.6%)
Higher Secondary Education	9 (47.4%)
University	0 (0.0%)

Table 2 - Break down of insight and adherence across the study population (n=19) \*

Scale	Study Population (n=19)
<b>BIS Total</b>	
N Total	19
Mean Score	8.79 (3.95)
Full Insight	7 (36.8%)
Good Insight	5 (26.3%)
Poor Insight	7 (36.8%)
No Insight	0 (0.0%)
<b>Awareness of Symptoms</b>	
N Total	19
Mean Score	2.32 (0.75)
Good Insight	3 (15.7%)
Poor Insight	16 (84.2%)
<b>Awareness of Illness</b>	
N Total	19
Mean Score	1.63 (1.46)
Good Insight	4 (21.1%)
Poor Insight	15 (78.9%)
<b>Awareness of Need for Treatment</b>	
N Total	19
Mean Score	2.42 (1.74)
Good Insight	12 (63.2%)
Poor Insight	7 (36.8%)
<b>Drug Attitude Inventory (DAI-10)</b>	
N Total	19
Mean Score	1.05 (3.85)
Positive Score	9 (47.4%)
Negative Score	6 (31.6%)
Score = 0	4 (21.1%)

\*Break down of insight (according to the Birchwood Insight Scale and subscales) and adherence (according to the Drug Attitude Inventory) across the study population (n=19)

**Table 3 - Analysis of variance of DAI-10 scores according to participant demographics**

<b>Demographics</b>	<b>N</b>	<b>Mean DAI-10 Score</b>	<b>95% CI</b>	<b>P Value*</b>
<b>Gender</b>				0.866
N Total	19	1.05 (3.85)	-0.80, 2.91	
Male	10	1.20 (3.55)	-2.47, 4.25	
Female	9	0.89 (4.37)	-0.80, 2.91	
<b>Age Category</b>				0.056
N Total	19	1.05 (3.85)	-0.80, 2.91	
18-20	3	-2.67 (3.06)	-10.26, 4.92	
21-30	10	1.40 (3.13)	-0.84, 3.64	
31-40	2	7.00 (1.41)	-5.71, 19.71	
41-50	3	0.67 (4.16)	-9.68, 11.01	
51-60	1	-2.00		
<b>Ethnicity</b>				0.301
N Total	19	1.05 (3.85)	-0.80, 2.91	
Chhetri	5	-2.00 (2.45)	-5.05, 1.04	
Bahun	6	2.33 (4.08)	-1.95, 6.62	
Magar	2	2.00 (5.66)	-48.82, 52.82	
Tamang	3	0.67 (4.16)	-9.68, 11.01	
Other	3	3.33 (3.06)	-4.26, 10.92	
<b>Religion</b>				0.755
N total	19	1.05 (3.85)	-0.80, 2.91	
Hindu	12	0.83 (4.13)	-1.79, 3.46	
Buddhist	7	1.43 (3.60)	-1.90, 4.76	
<b>Employment Status</b>				0.281
N Total	19	1.05 (3.85)	-0.80, 2.91	
Full Time Employment	2	2.00 (2.83)	-23.41, 27.41	
Casual Employment	1	-2.00		
Student	4	-1.00 (4.76)	-8.58, 6.58	
Carer of a dependent	1	8.00		
Unemployed	11	1.27 (3.38)	-1.00, 3.54	
<b>Living Arrangements</b>				0.208
N Total	19	1.05 (3.85)	-0.80, 2.91	
Living with parents	12	0.00 (3.19)	-2.03, 2.03	
Home owner	6	2.33 (4.63)	-2.53, 7.20	
Other	1	6.00		
<b>Education</b>				0.388
N Total	19	1.05 (3.85)	-0.80, 2.91	
Basic Education	10	1.80 (4.66)	-1.53, 5.13	
Higher Secondary Education	9	0.22 (2.73)	-1.88, 2.32	

\*Means of demographic groups compared using one-way ANOVA analysis (0.05 significance level)

**Table 4 - Correlation between Birchwood Insight Scale (BIS) and subscales and the Drug Attitude Inventory (DAI-10)**

<b>Insight Scale</b>	<b>N</b>	<b>Pearson Correlation Coefficient</b>	<b>P Value*</b>
BIS Total	19	0.585	0.009
Awareness of Symptoms	19	0.032	0.895
Awareness of Illness	19	0.112	0.647
Awareness of Need for Treatment	19	0.609	0.006

\*Correlation was tested using Pearson's 2-tailed analysis at 0.01 significance level

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [STROBEChecklist.doc](#)