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Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_492_23

Evaluation of oral health education programs among patients with schizophrenia in India: An interventional study

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Received: 11-04-2023
Accepted: 05-09-2023
Published: 07-02-2024

Abstract:

BACKGROUND: Schizophrenia is a mental disease that can drastically affect oral health. Hence, this remains a significant factor that affects oral health-related quality of life (OHRQoL). Assessing the OHRQoL in schizophrenic patients is one of the primary needs. The oral health impact profile is an impressive range of instruments that assesses the impact of oral conditions on well-being and quality of life.

MATERIALS AND METHODS: A 100 schizophrenic individuals were randomly selected from the Psychiatry Department of Government Hospital, Patna, Bihar, India, and grouped into two groups: (a) Group I with group-based sessions and (b) Group II with one-on-one interactions. Inclusion criteria: (a) Individuals who received the clinical confirmatory diagnosis of schizophrenia, (b) Patients who regularly reported to the psychologist for periodic evaluation, and (c) Patients who could follow instructions. Exclusion criteria: (a) Patients or their caregivers who were unwilling to participate in the study, (b) Patients with any other mental health disability other than schizophrenia, (c) Patients with muscular or nervous system disorders, and (d) Patients who could not follow instructions. Patients were educated on the modified Bass technique, and mean \pm standard deviation plaque scores were compared at the baseline and after 12 weeks of intervention.

RESULTS: Statistical analysis was performed using the Chi-square analytical test and paired “t-test.” Statistically significant differences were observed in plaque scores in both groups ($P < 0.001$).

CONCLUSION: Educational training tools help in improving oral health in schizophrenic patients.

Keywords:

Education, oral health, Schizophrenia, tooth brushing

Introduction

Schizophrenia remains a priority related to the mental status of health globally as a result of the high degree of disability associated with it. It has been closely related with prematurely attained mortality, poverty as well as human rights abuse.^[1] This disorder requires specific attention, especially in low-income as well as middle-income nations. Adverse side effects of schizophrenia undergo

manifold increase due to inadequate and, sometimes, inaccessibility of existing health care centers. Most importantly, it has been observed repeatedly that in low-income-based countries, a severe shortage of mental health care specialists exists, and most of these mental health specialists are concentrated in and around urban areas. Due to this, 89% of individuals suffering from schizophrenia, especially in most of the low-income generating countries, have no access to evidentiary-based treatment.^[2]

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How to cite this article: Purushothaman B, Karishma, Agrawal A, Nazeer J, Choudhury BK, Rajguru JP, *et al.* Evaluation of oral health education programs among patients with schizophrenia in India: An interventional study. J Edu Health Promot 2024;13:14.

Schizophrenic individuals show more enhanced functional body recovery by means of psychosocial rehabilitation along with pharmacological therapy. However, this form of therapy is largely absent in most of the developing countries.^[3]

The average life span of schizophrenic patients has been found to reduce by 15–20 years when compared with the general overall population. The higher prevalence of physical disabilities observed among patients with schizophrenia is mostly related to lifestyle-related factors.^[4-6]

These factors include smoking, consumption of high fatty content, a diet with low content of fiber, and lack of exercise when compared with the general populace.^[7] Thus, numerous studies with the aim regarding the development of healthy and effective interventions involving cessation of smoking, managing weight, exercising, and educating regarding nutritional dietary intake have been undertaken previously.^[8-11]

Compliance in schizophrenic patients involves longer interventions related to lifestyle that get affected due to occasional negative types of symptoms, lifestyle disruptions, and frequent hospitalizations.^[12]

However, when compared with diseases of a systemic nature, very little attention has been given to the oral health status of patients suffering from schizophrenia, though these individuals are at a higher risk of developing oral diseases that are associated with systemic disorders such as coronary heart diseases, type II diabetes, respiratory diseases, and hyperlipidemia.^[13-15]

Poor status of oral health affects the quality of life, nutritional status, speech, self-esteem, and various social and psychological aspects of one's life as well.^[16]

Hence, the aim of the present study was to evaluate the effectiveness of different oral health education programs among patients with schizophrenia in India.

Materials and Methods

Study design and setting

This randomized, controlled prospective study was carried out in the Public Health and Community Dentistry Department.

Study participants and sampling

A total of 100 patients (intervention group) who were clinically diagnosed to be suffering from schizophrenia were randomly selected from the Psychiatry Department of Government Hospital, Patna, Bihar, India. The sample size was calculated using Epi Info software. For control,

ethical clearance was obtained from the Institutional Ethics and Review Board. Written informed consent was obtained from patients' caregivers before initiating the study.

The study group was provided professional training in the modified Bass technique for brushing of teeth by a qualified dentist, while basic techniques for modifying behavior were imparted by a trained psychologist.

Evaluation of oral hygiene status

Dental plaque indexing was conducted using a blinded study by another dentist both before and following this study experiment. The observations were repeated by the first dentist on 10% of tested patients. Good intra and interobserver reliability was seen.

Inclusion criteria: (a) Individuals who received a clinical confirmatory diagnosis of schizophrenia, (b) Patients who regularly reported to the psychologist for periodic evaluation, and (c) Patients who could follow instructions.

Exclusion criteria: (a) Patients or their caregivers who were unwilling for participating in the study, (b) Patients with any other mental health disability other than schizophrenia, (c) Patients with muscular or nervous system disorders, and (d) Patients who could not follow instructions.

Different oral health intervention was as follows: (a) Group I: The study group participants were provided with group education concerning oral health. This was phased into five sessions that included: (1) Anatomical structural constitution of the oral cavity as well as teeth, (2) Significance of good oral and dental health, (3) Pathogenetic mechanisms underlying dental caries and periodontal disorders, (4) Modified Bass method for tooth brushing, and (5) Good oral hygienic status. The educational sessions were carried out by investigators (both dentists) for a total duration of 60 min per session. Each of these sessions was conducted at regular two-week intervals.

For the demonstration of the modified Bass technique of brushing teeth, the pictorial depictions of this technique were pasted over the bathroom mirrors of each study participant. Songs that served as reminders for brushing teeth were selected. These songs carried messages regarding the beneficial effects of brushing the teeth. These songs were then broadcasted up to five times a day, that is, on waking up, following meals, and before retiring to bed, as reminders to participants to brush their teeth.

And, (b) Group II: In this group, each of the schizophrenic patients were provided with individual intervention.

This included: (1) Instructions on the modified Bass brushing technique: Following group-based educational sessions, each of the participants were given face-to-face training in the modified Bass technique for brushing by study investigators. Each of the study participants was evaluated for the correct brushing method. Individually, behavior modification was taken up for each study participant. The token system was used for reinforcing the habit of brushing teeth and for adherence to participation in each of the group meeting. Following the accomplishment of successfully completing tooth brushing, each participant was awarded a token worth one point. Participants were awarded with tokens with five points per attendance in group sessions. Tokens collected were exchanged with money for purchasing goods for use in day-to-day lives, such as toothpaste, soap, shampoo, safety pins, etc.

Calculation of dental plaque scoring index

Plaque index scores were collected at baseline (day 0) and then at intervals of 12 weeks after providing intervention. Plaque control recording system proposed by O’Leary et al.^[17] (1972) for scoring the primary study outcome, accumulation of plaque over teeth surfaces. The plaque score was calculated by evaluating the extent of plaque, which was then divided by examined tooth surfaces. A high plaque index was indicative of a poor level of oral hygiene. Individual plaque scores were calculated by calculating the average plaque index scores for indexed teeth at the time of oral examination. This was done by a single clinical examiner blinded to the group (i.e., Groups I or II) assigned.

Statistical analysis

The data collected was processed by using the statistical software Statistical Package for Social Sciences (SPSS version 18.0). A statistical tool, the Chi-square analytical test, was employed for comparing the proportions of both the groups’ categorical variables. A paired ‘t-test’ was used for comparison within group differences following the completion of the study. The significance level of the study was fixed at 0.05.

Results and Observations

Demographic data: A total of 100 schizophrenic patients participated in this study. The participants were equally divided into two study groups (Groups I and II) for comparison of data obtained by both interventions. Most of the patients were in the age range of 57 to 78 years. 60% were males, while 40% were females. Twenty-seven had post-graduate degrees or diplomas, 39 were graduates, 24 had education till high school while 10 had primary school education. Most of the patients had some extent of xerostomia and related symptoms.

Baseline comparisons between groups indicated no significant difference in the demographic characteristics.

Dental plaque index scores

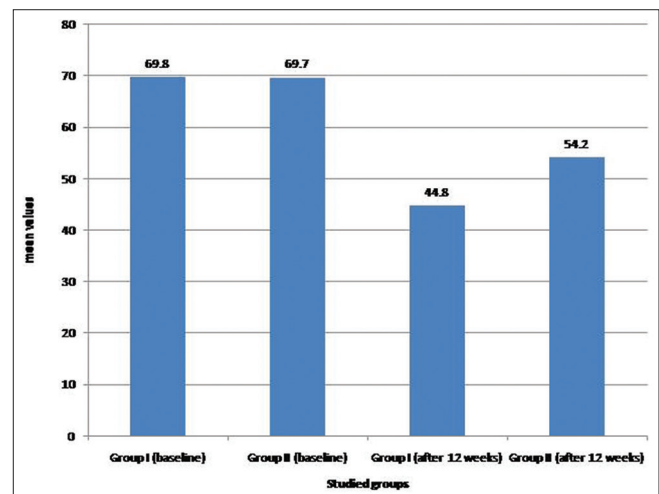
The Mean ± S.D. (standard deviation) plaque score index at baseline in Group I was found to be 69.8 ± 14.2 and in Group II was found to be 69.7 ± 14.1. On comparing the mean ± S.D. scores in both the study groups, no statistical significance was obtained ($P = 0.67$). Following 12 weeks of group education, the mean ± S.D. plaque scores in Group I were noted as 44.8 ± 9.1. This demonstrated a significant improvement when compared with the baseline plaque index. Whereas, in Group II, the mean ± S.D. plaque scores after individual intervention were observed as 54.2 ± 11.1. On statistical comparison, a highly significant P value ($P < 0.001$) was obtained when compared with baseline plaque scores. Thus, the mean dental plaque score index has shown a significant improvement in both Group I as well as Group II. [Graph I and Table 1].

Analysis of socioeconomic status (SES) and mean plaque scores

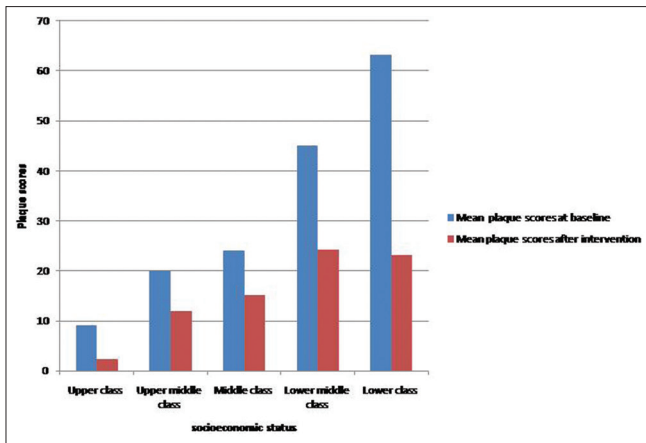
On comparing mean ± S.D. plaque scores at baseline and following intervention in schizophrenic patients belonging to the upper class, while significant improvements were made in upper middle ($P = 0.02$), middle ($P = 0.01$), lower middle ($P = 0.04$) and lower classes ($P = 0.001$) of patients [Table 2 and Graph 2].

Table 1: Showing mean±standard deviation (S.D.) scores of Group I and II

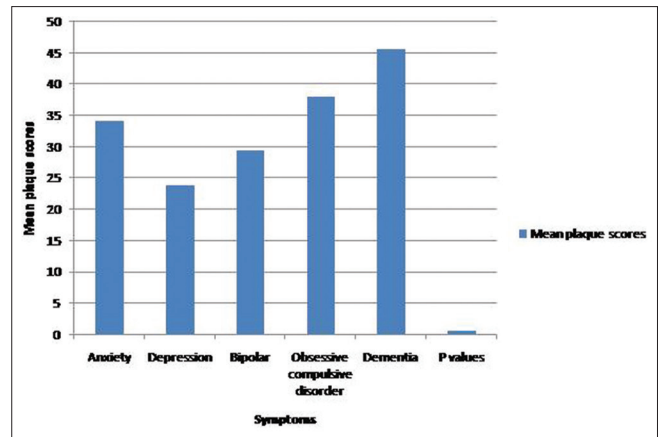
	Mean±S.D. plaque index score at baseline		Mean±S.D. plaque index score following 12 weeks of intervention	
	Group I	Group II	Group I	Group II
	69.8±14.2	69.7±14.1	44.8±9.1	54.2±11.1
P	0.67		0.001	



Graph 1: Graph depicting mean values in study Groups I and II



Graph 2: Graph illustrating mean plaque scores in various socioeconomic groups



Graph 3: Graph illustrating mean plaque scores associated with various symptoms

Symptoms associated with schizophrenia and mean plaque scores

No statistical correlation was obtained on comparing ($P = 0.67$) various symptoms of schizophrenia and plaque scores [Table 3 and Graph 3].

Discussion

Schizophrenia remains to be a mental disease that affects 1% of the total world population. Individuals diagnosed with schizophrenia have a higher rate of mortality as the average expectancy of life has been found to reduce by 20%. This mental condition has been associated with morbidity as well since schizophrenic individuals have large numbers of missing and/or decayed number of teeth. Both indexes of dental caries as well as periodontal diseases have been found to have almost two times the scores when compared with the normal population. The poor status of oral and dental health has been found to drastically affect one’s quality of life (QoL) as oral health remains indistinct from a person’s systemic health. Thus, managing oral health-related issues involves a multidisciplinary approach. As per the WHO (World Health Organization), the main objective of therapeutically directed education is helping schizophrenic patients to indulge in self-care and empowering them both mentally and physically as well as assisting recovery.^[18]

In the present study, a statistically significant association was observed between providing training and educational training to schizophrenic patients using the modified Bass method for brushing of teeth and improvement in mean plaque index scores after a follow-up period of 12 weeks.

Our findings have been supported by Denis *et al.*^[18] (2016), in their clustered randomized control trial, showed that attaining knowledge regarding educational training on

Table 2: Comparisons between mean plaque scores with socioeconomic status

Socioeconomic status	Mean±S.D. plaque scores at baseline	Mean±S.D. plaque scores after intervention	P
Upper class (n=10)	09±0.34	2.3±0.12	<0.0001
Upper middle class (n=17)	20±1.2	12±0.02	0.02
Middle class (n=40)	24.1±0.13	15.1±0.15	0.01
Lower middle class (n=10)	45.1±0.97	24.2±0.10	0.04
Lower class (n=23)	63.2±10.1	23.1±0.09	0.001

S.D.=standard deviation

oral health status led to a significant improvement in oral health-related quality of life (OHRQoL).

Similarly, Kuo *et al.*^[19] (2020), in their randomized cluster control analysis, reported significant improvement in plaque index scores after receiving intervention in the form of education training sessions.

In addition, Almomani *et al.*^[20] (2006) reported significant improvement in knowledge of oral health following education sessions.

Thus, a significant improvement in oral health-related index scores and overall quality of life has been reported following education-based training on maintaining oral health in a schizophrenic individual.

Conclusion

Schizophrenia has been associated with increased morbidity due to poor oral health. Hence, education-based oral health training for these individuals has shown a marvelous improvement in their oral hygiene status.

Acknowledgments

The authors would like to thank all the study participants who agreed to participate in the study.

Table 3: Comparisons between various presenting symptoms of schizophrenia and mean±S.D. plaque scores

Symptoms	Anxiety	Depression	Bipolar	Obsessive-compulsive disorder	Dementia	P
Mean±S.D. plaque scores	34.1±0.78	23.9±0.89	29.4±0.56	38.1±0.29	45.6±2.2	0.67

S.D.=standard deviation

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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