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A Cross-Sectional Study To Assess The Knowledge And Practices Of Personal Hygiene Among Visually Challenged Adolescents And Evaluating The Effectiveness Of Braille Charts On Imparting Hygienic Health Tips

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KEYWORDS

visually challenged schools, psychological health, lifestyle

ABSTRACT

Background: Maintaining hygiene is necessary for many reasons-personal, social, health and psychological and keeping good standard of hygiene which help to prevent the development and spread of infections, illnesses, and bad odors. Being visually challenged poses a great challenge while maintaining hygiene and is an understudied topic in literature. **Methodology**: This is a descriptive cross-sectional study with a total of 20 schools for the visually challenged in Tamil Nadu of which 3 were located in Chennai. Visually challenged adolescents aged between 10 and 19 years were selected as the study population.

Results: The mean of knowledge of personal hygiene among the study participants was 33.27±4.564. 16-19 years age participants had a higher mean score of knowledge of personal hygiene when compared to 11-15 years age group which was not statistically significant. Females, 3 generation families and participants belonging to socioeconomic class 1, had a higher mean score of knowledge of personal hygiene. Knowledge of personal hygiene of the study participants improved after giving health education using Braille charts on hygienic health tips.

Conclusion: Modern lifestyle is becoming more complicated and people are given importance based on their outward appearance rather than their feelings. Personal hygiene is a word to teach and practice as a part of routine life because it is very important to maintain one's dignity in this materialistic world. Especially, for visually challenged adolescent girls who require more effort to shine best in this world.

1. INTRODUCTION

Hygiene is a series of practices performed to preserve health. According to the World Health Organization (WHO), hygiene refers to "conditions and practices that help to maintain health and prevent spread of diseases." Hygiene involves maintaining good oral health, hand washing habits after defecation and before and after meals, face washing, cutting finger nails and

bathing. Menstrual hygiene takes supreme importance among personal hygiene habits of females. Maintaining a high quality of hygiene helps to stop the formation and spread of diseases, illnesses, and offensive odours. Hygiene is important for a variety of reasons, including personal, social, health, and psychological ones. Being visually challenged poses a great challenge while maintaining hygiene and is an understudied topic in literature.

In addition to lowering our risk of developing various health issues, maintaining good personal hygiene practises also has an impact on our social and psychological well-being. Good personal hygiene also makes us appear more presentable and alluring while assisting in the prevention of the growth and spread of illnesses, diseases, and unpleasant body odours. Washing one's hands frequently, especially after using the restroom and before touching any food, and maintaining a clean environment are the two most crucial preventative health measures one can implement in their daily lives. A healthy and well-groomed person who pays attention to his or her appearance will have good teeth, hair, skin, and nails. This can give confidence in everyday life and social interactions[1].

Good teeth are only one aspect of oral health; whole health and wellbeing depend on it. Poor oral health has a negative impact on nutrition, digestion, the ability to chew and enjoy food, facial shape and speech[4]. A growing number of people are becoming aware of the importance of maintaining good oral hygiene due to a decline in dental caries, an increase in the number of people keeping their teeth, and a focus on cosmetically appealing dentitions. For visually challenged individuals monitoring their oral hygiene and addressing any issues like cavities or plaque deposits is very difficult. They need frequent monitoring by their parents, teachers or caretakers in this regard.

Clean hands is not merely the absence of dirt. Washing hands before and after meals, after using the toilet etc are basic hand hygiene measures to be followed. Trimming nails regularly and keeping them free of dirt is also an essential part. All of these pose a great challenge to the visually challenged. In order to reduce the spread of infections, educational interventions to encourage hand washing in school settings aim to increase knowledge and awareness about good hand hygiene. These interventions have been linked to decreased absenteeism, gastrointestinal infections, and increased hand washing compliance. When someone knows why and how to wash their hands, they may be more inclined to do so[5]. Proper sleep hygiene is just as important to our well-being as any other form of hygiene. Like washing our hands after going to the restroom or brushing and flossing our teeth each day, sleep hygiene is a series of practices that are beneficial to our overall health. More than maintaining one's overall health, good sleep hygiene helps prevent diseases as well by giving one's body the rest it needs to fight off illnesses or infections. Lack of sufficient sleep not only exhausts our body but can weaken the immune system. After a year like 2020, we can all agree on the importance of doing whatever it takes to keep a strong and healthy immune system[10].

Keeping hair clean and free of dirt, dandruff and louse is a difficult task for children and their parents even more so for the visually challenged. Many diseases and ailments that affect the scalp can be prevented and controlled by maintaining a healthy scalp and hair through good hygiene and appropriate hair care. These conditions can spread by direct contact with an infected animal or human, or from the environment. Avoiding the sharing of combs, towels, or other private objects and routinely washing our hands can help keep us safe[9]. The most typical method of head lice transmission is direct head-to-head (hair-to-hair) contact. For halting and preventing the spread of head lice, good hygiene habits are crucial. Do not, for instance, exchange towels, combs, or brushes[8]. If our hair is messy, oily, or extremely overgrown, it is likely people will notice. They may assume that we are untidy, careless, unprofessional, or even untrustworthy–purely because of the appearance of our hair. This may contribute to discrimination that the visually challenged already face[9].

2. AIM AND OBJECTIVES

1.To assess the knowledge and practices of personal hygiene among visually challenged adolescents.

2. To determine the personal hygiene and oral hygiene practices in visually challenged adolescents.

3. To evaluate the effectiveness of Braille charts on imparting hygienic health tips 3 months after its administration.

3. METHODOLOGY

STUDY DESIGN: A descriptive cross-sectional study

STUDY AREA: There are a total of 20 schools for the visually challenged in Tamil Nadu of which 3 are located in Chennai- the capital city of Tamil Nadu.

STUDY POPULATION: Adolescents with visual impairments between the ages of 10 and 19 were chosen as the study's participants. They were identified from visually challenged schools in Chennai.

STUDY PERIOD: The study was done over the course of a year. (April 2021-March 2022)

SAMPLE SIZE: Based on the study done by Nadagaddi et al[11], where 30.4% participants had knowledge on personal hygiene, which was taken as reference value for sample size calculation, and keeping the margin of error as 5% using Dobson's formula $Z^2_{\alpha-1/2}$ PQ/L^2

where P= 30.4,

Q = 69.6 ,

L= 5 and

Z = 1.96.

Sample size= 1.96X1.96X30.4X69.6/25= 325 at 95% C.I

Accounting for 10% non-response, the final sample size is 357.5 which was rounded off to 360.

INCLUSION AND EXCLUSION CRITERIA: Visually challenged adolescent boys and girls aged between 10-19 and those who could understand English and Tamil were included in the study. Adolescents who were disabled in speech and hearing and adolescents with cognitive impairment were excluded from the study.

4. SAMPLING TECHNIQUE

Out of 20 schools for visually challenged in Tamil Nadu, 3 schools are located in Chennai. By using probability proportional to size, sample size of 360 was achieved.

	School A	**School B**	**School C**
Total no: of: children	495	275	198
No:of: students satisfying inclusion criteria	275	150	108
Participants selected by using Probability Proportional to Size	198	75	54

ETHICAL CONSIDERATION: The investigator followed all the ethical guidelines which were issued by the Institutional Research Ethical Committee. After a thorough review of the study topic and its inclusions the Ethical committee at Sree Balaji Medical College and Hospital approved the study for its further proceeding (Ref.No:002/SBMC/IHEC/2020/1432).

DATA COLLECTION METHOD: A brief introduction was first given to the study participants about self and purpose of the study by the investigator. Written informed consent in English and Tamil was then obtained from the respondents' parents, guardians or teachers according to their willingness to participate. Confidentiality maintenance regarding all the collected information was assured to the participant. All necessary COVID-19 precautionary measures like sanitising hands, wearing mask and maintaining social distance was followed. Data was collected through a face -to-face interview among the study participants by the investigator herself using a pre validated structured questionnaire. The participants were interviewed and questions about demographic details were collected. Each respondent was interviewed for about 15 minutes after which Braille charts on hygienic health tips were given to the students. Health education was given to all participants using Braille charts and 3 months later, 30 selected participants with poor hygiene issues that could be corrected, were selected for a before and after study to evaluate the effectiveness of this health education using a post-test questionnaire.

DATA ANALYSIS AND INTERPRETATION: Data entry was done in Microsoft Excel. Appropriate descriptive statistical measures were expressed as frequency and percentage. Chi square test was used to identify the association between factors and selected variables. The results are presented in the form of tables, graphs and figures etc. using SPSS 22.0 version. P value < 0.05 was considered statistically significant throughout the study.

5. RESULTS

Demographic details of the study participants:

The study included 360 visually challenged adolescents, with a majority aged 11-15 years (55.6%) and predominantly male (65%). The mean age of the participants was 14.99±2.004 years (range:11-19years). More than 100 participants were 16 years of age. Only 10 of the study participants were 19 years of age. Most participants' primary informants were their mothers (70%), and over half belonged to nuclear families (53.9%). About 68.6% of the adolescents had no siblings, and among those who did, 93.8% had only one sibling. The most common family size was three members (44.7%). Regarding socioeconomic status, 52.5% of participants belonged to Class I as per the Modified B.G. Prasad scale (2021). A larger proportion resided in hostels (63%) compared to day scholars (37%). Fathers were predominantly graduates (53.1%) and semi-skilled workers (43.6%), while mothers were mainly graduates (40.8%) but largely employed in semi-skilled occupations (68.9%).

Table1 : Demographic details of the study participants(N=360)

Demographic details		**Frequency (n)**	**Percentage (%)**
Age	11 to 15	200	55.6
	16 to 19	160	44.4
Gender	Male	234	65
	Female	126	35
Informant	Mother	252	70
	Father	79	21.9
	Teacher	22	6.1
	Grand Mother	7	1.94
Type of family	Nuclear family	194	53.9
	Joint family	121	33.6
	3 generation family	45	12.5
Presence of siblings	No	247	68.6
	Yes	113	31.4
Number of siblings	1	106	93.8
	2	7	6.2
Size of family	3	161	44.7
	4	96	26.7
	5	67	18.6
	6	36	10
Socioeconomic status (Modified B.G.Prasad SES scale-2021)	Class 1	189	52.5
	Class 2	34	9.4
	Class 3	31	8.6
	Class 4	66	18.3
	Class 5	40	11.1
Staying in	hostel	223	63
	Day scholar	133	37
Fathers' education	Illiterate	58	16.1
	Primary school	4	1.1
	Secondary school	107	29.7
	Graduate	191	53.1
Fathers' occupation	Semi skilled	157	43.6
	Skilled	34	9.4

	Semi professional	70	19.4
	Professional	99	27.5
Mothers' education	Illiterate	73	20.3
	Primary school	51	14.2
	Secondary school	89	24.7
	Graduate	147	40.8
Mothers' occupation	Semi skilled	248	68.9
	Skilled	11	3.1
	Semi professional	44	12.2
	Professional	57	15.8

Association of knowledge scores for personal hygiene and demographic variables:

Statistically significant differences in mean knowledge scores were observed across several demographic variables. Female participants had significantly higher scores compared to males ($p = 0.001$). The type of informant showed a strong association, with those informed by teachers having the lowest mean score and those informed by grandmothers the highest ($p < 0.001$). Family structure significantly influenced scores: adolescents from joint families and three-generation families had higher scores compared to those from nuclear families ($p < 0.001$). Similarly, participants from larger families (five or more members) had significantly better scores ($p < 0.001$). Socioeconomic status showed a strong association, with Class I participants scoring higher than those from lower socioeconomic classes ($p < 0.001$). Higher parental education was associated with better scores. Children of graduate fathers and mothers had significantly higher scores compared to those whose parents were illiterate ($p < 0.001$). The father's and mother's occupation also showed significant differences; children of semi-professional and professional parents had higher scores than those of semi-skilled parents ($p < 0.001$ for fathers and $p = 0.004$ for mothers). No statistically significant association was found with age group or presence of siblings ($p > 0.05$).

Table 2: Association Between Demographic Variables and Mean Knowledge Scores on Personal Hygiene Among Visually Challenged Adolescents (N = 360)

Demographic details		**Mean±SD**	**P value**
Age	11 to 15 years	32.99±4.722	0.207
	16 to 19 years	33.61±4.348	
Gender	Male	32.67±4.644	**0.001***
	Female	34.38±4.206	
Informant	Teacher	28.77±2.707	0.0001
	Grand Mother	35.00±0	
	Father	33.43±4.777	
	Mother	33.27±4.654	
Type of family	Nuclear family	32.28±4.690	**0.000***
	Joint family	34.82±4.433	
	3 generation family	33.33±2.992	
Presence of siblings	No	33.04±4.401	0.165
	Yes	33.76±4.883	
Size of family	3	32.45±4.585	**0.000***

	4	32.30±4.432	
	5	35.07±3.986	
	6	36.11±3.748	
Socioeconomic status (Modified B.G.Prasad SES scale-2021)	Class 1	34.60±4.064	**0.000***
	Class 2	33.09±3.965	
	Class 3	30.84±5.184	
	Class 4	31.48±4.166	
	Class 5	31.95±3.630	
Father's education	Illiterate	29.91±3.757	**0.000***
	Primary school	34.0±0	
	Secondary school	33.83±4.773	
	Graduate	33.95±4.279	
Father's occupation	Semi skilled	32.11±4.724	**0.000***
	Skilled	32.65±4.410	
	Semi professional	36.37±3.735	
	Professional	33.12±3.900	
Mothers' education	Illiterate	30.56±3.793	**0.000***
	Primary school	32.39±4.267	
	Secondary school	34.47±5.030	
	Graduate	34.18±4.120	
Mothers' occupation	Semi skilled	32.72±4.683	**0.004***
	Skilled	33.0±0	
	Semi professional	34.36±4.024	
	Professional	34.86±4.414	

Association of practices scores for personal hygiene and demographic variables:

Statistically significant associations were observed between hygiene practice scores and several demographic factors. Informant type had a highly significant effect ($p < 0.001$), with adolescents informed by grandmothers scoring highest, while those informed by teachers had the lowest mean scores. Type and size of family were also significantly associated with hygiene practices, with participants from joint families and larger families (six members) showing higher scores ($p < 0.001$). Socioeconomic status was a significant determinant; participants from Class I had the highest practice scores compared to lower socioeconomic classes ($p < 0.001$). Parental education and occupation also influenced scores. Children of graduate mothers and semi-professional fathers had better hygiene practice scores ($p < 0.001$). Although father's education and mother's occupation showed statistically significant associations ($p = 0.017$ and $p = 0.006$ respectively), gender and presence of siblings were not significantly associated with practice scores ($p > 0.05$). The age group was borderline significant ($p = 0.052$).

Table 3: Association Between Demographic Variables and Mean Practice Scores on Personal Hygiene Among Visually Challenged Adolescents (N = 360)

Demographic details		**Mean±SD**	**P value**
Age	11 to 15 years	27.24±2.084	0.052
	16 to 19 years	26.83±1.833	
Gender	Male	26.98±2.006	0.326
	Female	27.20±1.943	
Informant	Teacher	25.36±1.497	**0.000***
	Grand Mother	30.0±0	
	Father	26.77±2.348	
	Mother	27.21±1.786	
Type of family	Nuclear family	26.91±1.642	**0.000***
	Joint family	27.65±2.386	
	3 generation family	26.11±1.668	
Presence of siblings	No	26.94±1.887	0.092
	Yes	27.32±2.168	
Size of family	3	26.85±1.659	**0.000***
	4	26.95±1.489	
	5	26.84±3.003	
	6	28.69±1.305	
Socioeconomic status (Modified B.G.Prasad SES scale-2021.)	Class 1	27.49±2.017	**0.000***
	Class 2	27.26±1.163	
	Class 3	26.45±1.859	
	Class 4	26.64±2.110	
	Class 5	26.03±1.672	
Fathers' education	Illiterate	26.33±1.369	0.017
	Primary school	28±0	
	Secondary school	27.22±2.250	
	Graduate	27.17±1.961	
Fathers' occupation	Semi skilled	26.70±1.920	**0.000***
	Skilled	26.35±1.807	
	Semi professional	28.29±1.643	
	Professional	27.00±2.025	
Mothers' education	Illiterate	25.79±1.490	**0.000***
	Primary school	26.98±1.435	

	Secondary school	27.90±2.148	
	Graduate	27.20±1.962	
Mothers' occupation	Semi skilled	26.88±1.894	0.006
	Skilled	28.27±1.272	
	Semi professional	26.91±2.726	
	Professional	27.70±1.603	

Correlation Between Age, Knowledge, and Practice Scores of Personal Hygiene:

A statistically significant moderate positive correlation was observed between knowledge and practice scores of personal hygiene among visually challenged adolescents ($r = 0.637$, $p < 0.001$), indicating that higher knowledge levels were associated with better hygiene practices. Additionally, age showed a significant but weaker positive correlation with both knowledge ($r = 0.423$, $p < 0.001$) and practice scores ($r = 0.234$, $p < 0.001$), suggesting that older adolescents tend to have better knowledge and slightly improved hygiene practices.

Table 4: Correlation Between Age, Knowledge, and Practice Scores of Personal Hygiene Among Visually Challenged Adolescents (N = 360)

Categories		**Age**	**Knowledge scores on personal hygiene**	**Practice scores on personal hygiene**
Age	Pearson correlation	1		
	P value			
Knowledge scores on personal hygiene	Pearson correlation	0.423	1	
	P value	0.000		
Practice scores on personal hygiene	Pearson correlation	0.234	0.637	1
	P value	0.000	0.000	

Effect of health education using braille charts:

A significant improvement was observed in both knowledge and practice scores of personal hygiene following the health education intervention using Braille charts. The mean knowledge score increased from 25.83 ± 1.17 to 31.33 ± 1.68 ($p = 0.014$), and the mean practice score improved from 23.26 ± 1.14 to 27.93 ± 3.60 ($p = 0.029$), indicating the effectiveness of Braille-based health education in enhancing hygiene-related awareness and behaviours among visually challenged adolescents.

Domain	Pre test score	Post test score	Mean difference	P value
Knowledge scores on personal hygiene	25.83±1.17	31.33±1.68	5.50	0.014
Practice scores on personal hygiene	23.26±1.14	27.93±3.60	4.66	0.029

6. DISCUSSION

The present study was done among 360 visually challenged adolescents to assess the knowledge of hygiene among the visually challenged adolescents and the effectiveness of Braille charts on hygienic health tips. Data was collected through a face -to-face interview among the study participants by the investigator herself. In the present study out of 360 participants, 63% were hostelers and 37% were day scholars where the number of day scholars were more than the number of hostelers. Those who are day scholars receive education about hygiene from their families on a daily basis in contrast to hostelers who depend solely on their teachers for hygiene education. In a similar study, it was found that age (r= 0.46) and education of

students (r = 0.47) is positively correlated with the knowledge of personal hygiene which interpreted that age and education progress the knowledge and practice of personal hygiene among visually challenged adolescents[6].

There was a significant mean difference between mean knowledge of personal hygiene of the study participants whose fathers were graduates and illiterate (33.95vs 29.91). Participants whose fathers were skilled workers had a higher mean score in knowledge of personal hygiene when compared to participants whose fathers were semi-skilled workers (36.37 vs 32.11).

There was a substantial mean difference in personal hygiene practises between study participants whose fathers were graduates and those whose fathers were uneducated (27.17vs 26.33). Participants whose father was a semi-professional worker had a higher mean score in practises of personal hygiene than participants whose father was a semi-skilled worker (28.29 vs 26.70). Participants whose fathers were illiterate had a poorer mean score in general hygiene practises when compared to participants whose fathers were graduates. When compared to children of semi-skilled working fathers, children of professional working fathers had a higher mean score of personal hygienic practises (26.88 vs 27.70). In a similar study where oral hygiene was assessed among the school children by Kristina Saldūnaitė et al, the children of parents with a high educational level scored better than those who had a low educational level 2.13 [SD, 0.39] vs.2.2 [0.43], P = 0.002)[7]. Participants in socioeconomic class 1 showed a statistically significant higher mean score of personal hygiene practises than participants in socioeconomic status class 5. Participants in socioeconomic class 1 showed a statistically significant higher mean score of knowledge of menstrual hygiene than participants in socioeconomic status class 5. Participants in socioeconomic class 1 showed a statistically significant higher mean score of menstrual hygiene practises than participants in socioeconomic status class 5. In type of family, participants living in joint family and 3 generation family had a higher mean score of knowledge of personal hygiene when compared to participants living in nuclear family (34.82,33.33vs 32.28) which was statistically significant as p value was 0.000. These findings were similar to the findings by Krishna Kumari Samantaray et al, where with regards to type of family, 65% of the study subjects which was more than half of adolescent girls were from nuclear family and only 35% of the study subjects were from joint family[12]. In the present study, knowledge of personal hygiene of the study participants improved from a mean difference of 25.83±1.17 to 31.33±1.68 after giving health education using Braille charts on hygienic health tips. There were no similar findings observed in previous studies.

7. CONCLUSION

Modern lifestyle is becoming more complicated and people are given importance based on their outward appearance rather than their inner feelings. Personal hygiene is a word to teach and practice as a part of routine life because it is very important to maintain one's dignity in this materialistic world. Especially, for visually challenged adolescent girls who require more effort to shine best in this world. Hence, we adopted an efficient method of understanding for visually challenged adolescents through Braille charts. The result revealed in the present study is with evidence that health education given through Braille charts is effective in promoting their level of knowledge on personal hygiene of visually challenged adolescents.

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