Association of personal hygiene with common morbidities among upper primary school children in rural Odisha

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ABSTRACT

Context: In India, children of upper primary school receive less attention from health-care providers. The majority of their health problems are preventable through hygienic practices. Aims: The aim of this study was to find out the association of personal hygiene with common morbidities among upper primary school children. Settings and Design: A cross-sectional study conducted in a rural upper primary school of Odisha. Subjects and Methods: A semi-structured schedule based on the Global School Health Survey Questionnaire and necessary instruments for clinical examination were used. Statistical Analysis Used: Data were entered in Microsoft Excel 2007 and analyzed by SPSS version 20 software. Results: Of 90 participants, 58 (64.4%) were girls. The mean age was 11.8 (±1.01) years. The mean body mass index of females was significantly higher than males (16.95 vs. 14.72; \( P = 0.001 \)). More than 90% of children maintained good personal hygiene such as clean tongue, clean hair, handwashing, and using footwear. The most common morbidities found were dental caries (38.9%), history of worms in stool and lethargy (20%). A mean score of 6.14 ± 0.11 (out of 8) was seen for personal hygiene and not associated with any particular morbidity or gender. Brushing daily was significantly associated with reduced dental caries (\( \chi^2 = 8.7; P < 0.005 \)) and foul-smelling breath (\( \chi^2 = 4.93; P < 0.05 \)). Fungal infections were significantly less in children who bathed daily (\( \chi^2 = 28.7; <0.005 \)) and wore clean clothes (\( \chi^2 = 5.06; P < 0.05 \)). Conclusion: Dental caries, foul-smelling breath, and fungal infections were significantly associated with poor personal hygiene. School health services should also focus on upper primary school children for improvement of personal hygiene.

Keywords: Morbidity, personal hygiene, school children

Introduction

Children spend a considerable time in schools where they are in close contact with each other facilitating transmission of diseases. Most of the health problems among school children are due to lack of personal hygiene and thus can be prevented by following hygienic practices. The hygienic practices developed during childhood will enable to lead a healthy life in adulthood. Teachers play a leading role in imparting education on personal hygiene as they are the first contacts. School health services have been an important program to provide nutritional support and medical assistance to lower middle-class school-going children, especially in developing countries. In India, children of upper primary school receive less attention from health-care providers as most health programs focus on infants and under-five children. Assessment of the state of personal hygiene of school-going children will give necessary inputs in improving their overall health.

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The present study was conducted among children of upper primary school situated in the rural field practice area of IMS and SUM hospital, Bhubaneswar, Odisha, with the following objectives:

- To assess the personal hygiene and morbidity pattern of rural upper primary school children
- To find out the association between personal hygiene and morbidity profile.

**Subjects and Methods**

A cross-sectional study was done in an upper primary school situated in the rural field practice area of the Hospital in Odisha, by conducting a health checkup program for 2 weeks in August 2014. All children studying in class VI, VII, and VIII were included. Necessary permission from the headmaster of the school was obtained before conducting the study and parents were duly informed by the school authority.

The study tools included pretested and predesigned semi-structured questionnaire based on the Global School Health Survey Questionnaire and instruments such as weighing machine, measuring tape, blood pressure instrument, tuning fork, Snellen chart and Ishihara chart. Students were interviewed using the questionnaire followed by clinical examinations. Clinical examinations were conducted by the interns, and wherever morbidity was found, confirmed by the medical officer of the rural health and training center to avoid observer bias.

Personal hygiene was assessed using a hygiene score by assigning one point to each of the correct hygiene practices. The maximum possible score was 8. Content validity of the tool was assessed by experts in the field. The significance of association of personal hygiene score with any particular morbidity or gender was determined using \( t \)-test (\( P < 0.05 \) was considered significant). Chi-square tests were applied to estimate significance between a particular hygiene practice and any morbidity. Data collected were entered in Microsoft Excel 2007 and analyzed by IBM SPSS Statistics Version 20 (© Copyright IBM Corporation & its licensors 1989, 2011) licensed to the institute.

**Results**

Of a total 116 students enrolled for the study, 90 students participated. Figure 1 shows the distribution of students in the classes and Figure 2 shows the gender distribution among all the participants.

The mean age of the study population was 11.8 (±1.01) years. The mean body mass index of females was significantly higher than males (16.95 vs. 14.72; \( P = 0.001 \)). More than 90% of children maintained good personal hygiene such as clean tongue, clean hair, handwashing, and using footwear. However, the practice of daily bathing and brushing was about 80% [Figure 3].

Only 23% of children did not have any morbidity. Boys had more morbidities than girls (87.5% vs. 70.6%) though it was not statistically significant (\( \chi^2 = 3.2; P = 0.07 \)). The most common morbidities found in the children were dental caries followed by history of worms in stool and lethargy (20%) [Figure 4].

Boys and girls did not differ regarding maintenance of personal hygiene [Table 1]. Of an 8-point score of personal hygiene, the
overall mean score was 6.14 ± 0.11, but it was not significantly associated with any particular morbidity or even gender. The mean score of boys and girls was 6.15 and 6.13, respectively.

Morbidity pattern was also similar among boys and girls except impaired visual acuity, which was found to be significantly higher in the girls ($\chi^2 = 6.2; P < 0.05$) [Table 2].

In our study, we also tried to find the association between morbidity and status of personal hygiene. It was found that brushing daily significantly reduced dental caries ($\chi^2 = 8.7; P < 0.005$) and foul-smelling breath ($\chi^2 = 4.93; P < 0.05$). Fungal infections were significantly less in children who bathed daily ($\chi^2 = 28.7; <0.005$) and wore clean clothes ($\chi^2 = 5.06; P < 0.05$).

**Discussion**

The present study was conducted to assess the status of personal hygiene and morbidity pattern of children in a rural upper primary school of Bhubaneswar, Odisha. It was based on interview using predesigned pretested questionnaire, anthropometric measurements, and clinical examinations.

We found that 77% of children were suffering from one or more morbidities. Boys were having more morbidities than girls, but it was statistically insignificant. A similar result was found by Deb et al. in a study done at Kolkata where boys had more morbidities than girls (76% vs. 74%). However, a study done in Assam showed that girls suffered more than boys (57.4% vs. 56.7%). Ananthakrishnan et al. also found that the prevalence of morbidity in girls is more (97.5% vs. 96.7%) than that in boys.

In our study, the major morbidities found were dental caries (40%), worms in stool and lethargy (20%), conjunctival redness (17.8%), and ear wax (15.6%). It is similar to the findings of studies done by Syed et al. in Hyderabad and Motakpalli et al. in Karnataka.

A study conducted in Hyderabad by Syed et al. showed that the most common morbidities were dental caries (56%), worms in stool (48%), and anemia (33%).

Deb et al. conducted a study in South Kolkata and found that the common morbidities in boys were pallor (55.34%), undernutrition (40.78%), and worm infestation (39.81%), and in the girls, it was pallor (51.85%), followed by dental caries (33.34%) and worm infestation (29.63%).

In the study done by Ananthakrishnan et al., it was found that worm infestation (46.4%) is more than dental caries (27.9%) among school children in Tamil Nadu.

In our study, the mean personal hygiene score of boys and girls was 6.15 and 6.13, respectively. In a study by Motakpalli et al. done in Karnataka, 65.9% of girls had good personal hygiene compared to boys (i.e., 60.5%).

In our study, girls maintained better personal hygiene than boys regarding clean hair (81% vs. 75%), wearing footwear (93% vs. 87.5%), and daily brushing of teeth (81% vs. 78.1%), though the difference was not statistically significant. Boys showed better hygienic practices related to clean nails (62.5% vs. 58.5%), handwashing (96.9% vs. 89.9%), daily bathing (84.1% vs. 79.3%), and clean tongue (100% vs. 96.6%).

The study by Deb et al. in Kolkata showed that the status of personal hygiene among girls was better than boys regarding clean and trimmed nails (77.8% vs. 50.5%, $P < 0.05$) and clean

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**Figure 4:** Types of morbidities found in the school children (in %)
hands and skin (92.6% vs. 68.9%, \( P < 0.05 \)), but the result for clean clothes and cleanliness of tooth and tongue was more or less same for both the sexes. Clean hair was found more in boys than girls (92.23% vs. 85.19%).\(^1\)

In a study by Okemwa \textit{et al.} in Kenya, only 48% of the school-age children were found to brush their teeth daily, which is much lower than that of our study (80%).\(^6\)

In another study among primary school students in Turkey by Arikan \textit{et al.}, it was reported that 94.2% were washing their hands with soap after using the toilet and 75.1% before taking meals.\(^7\)

**Conclusion and Recommendation**

Dental caries, foul-smelling breath, and fungal infections were significantly associated with poor personal hygiene. Although worms in stool, refractive errors, ear wax, and redness of conjunctiva were higher in children practicing low personal hygiene, a significant association was not found.

Since most of the morbidities were higher in children lacking proper personal hygiene, it is important to focus on programs for developing the personal hygienic practices. Care should be taken to improve the level of personal hygiene in children with a low socioeconomic and parental education level through coordinated and concerted health education measures by teachers as well as health workers.

A well-planned school health program can provide a proper health education with the active involvement of the parents and teachers. It would help parents to create a healthy environment in their homes so that their children can lead a healthy life. More focus on upper primary school children to be given in health programs of the country.

**Limitations of the study**

The study sampling was purposive and may not be generalizable. However, considering the findings being similar to other studies elsewhere in the country, as discussed, the study findings can be accepted in the Indian situation.

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**Conflicts of interest**

There are no conflicts of interest.

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