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ORIGINAL ARTICLE

EVALUATION OF A TRAINING PROGRAMME FOR NON-HEALTH PROFESSIONALS AS ORAL HEALTH EDUCATORS

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Involvement of oral health educators among non-health professionals in oral health promotion is important in the prevention of oral diseases. This study was carried out to compare the level of oral health knowledge among pre-school teachers before and after oral health seminar. Pre-test data was collected by distributing questionnaire to pre-school teachers in Pasir Mas, who attended the seminar on "Oral Health" (n=33) and they were required to fill anonymously before the seminar started. The questions consisted of information on general background, perceived oral health status, oral health knowledge and the environment where they work. After two weeks, post-test data was collected using the same structured questionnaire and identification code was used to match the pre and post data. SPSS 11.5 was use for statistical analysis. Two out of 33 eligible preschool teachers were considered non-respondents due to absenteeism during the post-test data collection. The response rate was 94.0% (n = 31). The study shows a significant improvement in oral health knowledge among pre-school teachers in Pasir Mas, after seminar ($p < 0.001$) as compared to controls. Thus, we can conclude that the oral health programme (seminar) appeared effective at influencing oral health educator's knowledge towards oral health.

Key words *: Pre school teachers, oral health educators, oral health promotion.*

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Introduction

Dental caries is a highly prevalent chronic disease and its consequences cause a lot of pain and suffering. Globally, the prevalence of dental caries among school children has declined, however it is increasing at a frightening rate in some disadvantaged community in both developed and developing countries particularly in children from families of low socio-economic status, refugees and immigrants (1-6). From National Oral Health Survey Of School Children 1997 (NOHSS'97), Oral Health Division, Ministry of Health, Malaysia, it was found that the proportion of 6 year-old students with one or more carious teeth in deciduous dentition was 80.6 %, 48.6 % had dft scores of 3 or less, mean dft was 4.1. Higher prevalence of dental caries among school children is also found in other parts of the world (7-11).

On the whole, dental caries prevalence of deciduous teeth among 6 year-old children was noted to be higher in rural areas as compared to urban with 89.4% and 73.3 % respectively (12). These findings are consistent with the figures found in China where the prevalence of dental caries among rural children was 86.0% and among urban children was 78.0% with the overall weighted prevalence was estimated to be 84.0 % (13-14).

Given the World Health Organization goals of 50% (1988) and the current Malaysian standard of only 24.35% (2001), therefore Oral Health Division, Ministry of Health, Malaysia had formulated the National Oral Health Plan, by the year 2010, 30% of 6 year-old children should be

Table 1 : Demographics of control and case group.

	Control group (Rantau Panjang)	Case group (Pasir Mas)
Participants: Total (all females)	26	31
Age (years):	n (%)	n (%)
Mean	41.3	37.1
20-29	1 (3.8%)	4 (12.9%)
30-39	10 (38.5%)	17 (54.8%)
40-49	13 (50.0%)	8 (25.8%)
≥ 50	2 (7.7%)	2 (6.5%)
Marital status:		
Single	1 (3.8)	4 (12.9%)
Married	21 (80.8%)	27 (87.1%)
Others (divorcee/ widow/ single parents)	4 (15.4%)	0
Educational level:		
Secondary	18 (69.2%)	18 (69.2%)
Tertiary (Diploma)	8 (30.8%)	8 (30.8%)

caries free deciduous dentition. This formulation was based on data from national epidemiological surveys, small-scale local studies and the Dental Subsystem under the Health Management Information System (HMIS) of the Ministry of Health (16). To achieve the goals set by the Ministry of Health Malaysia, various strategies are being planned that include health promotion in preschooler and oral health antenatal programme This goal is far behind the one that set by the World Health Organization (1988) for oral health, however it sounds realistic. The same situation is also faced by other developing countries like Thailand, Jamaica and Mexico where WHO goals for the year 2000 have not been achieved (7,10,17).

A structured pre-school programme has been in place in Malaysia since 1984 focuses on preventive and promotive activities for pre-school children attending kindergartens with the aim of creating awareness and inculcating positive oral health habits and attitudes. Initially three visits were made to identified kindergartens or pre-schools where oral health personnel carry out preventive activities such as dental health talks, tooth-brushing drills and sometimes a role play. However due to scarcity and constraints of resources, it was directed by Ministry of Health that, the three visits was reduced to two visits. In spite of a programme since 1984, dental caries among pre-school children is still a significant dental public health problem in Malaysia, particularly in rural communities (18). Therefore the program should also target the caregivers of pre-school children, emphasizing the integration of oral health and nutrition since diet and nutrition play an important role in oral health. Besides that, the programme also demanded pre-school teacher to be actively involved in monitoring oral health activities carried out in the school aimed at influencing lifestyle and oral hygiene behaviour of pre-school children, thus, requiring them to play a role as oral health educators. As health educators, they should be knowledgeable about oral health before they can monitor and deliver health message. This is one of the strategies to involve community participation in health promotion and it is in line with one of the health promotion principles and priorities aim at effective and active public or community participation (19).

The objective of this study is to evaluate the effectiveness of the oral health seminar to educate pre-school teachers as oral health educators to monitor and deliver recommended oral health promotion activities. The module used for the seminar based on "Guidelines on Oral Healthcare for Pre-school Children" and the topics were: Dental diseases and ways to prevent them, Importance of optimal oral health for general health, Role of diet and nutrition in oral health and Role of the kindergarten / preschool teachers in promoting oral health and health promotion.

Methodology

Study design

Table 2: Independent t-test analysis of control and case.

	Control (n=26) Mean(sd)	Case (n=31) Mean(sd)	Mean difference (95% CI)	t-staristic (df)	P value
Age (years)	41.3 (6.29)	37.1 (7.87)	4.17 (0.339, 8.006)	2.181 (55)	.033*
t-1 (Pretest)	34.0 (7.00)	35.1 (4.11)	-1.14 (-4.126, 1.855)	-76.1 (55)	.450
1-2 (Posttest)	36.0 (6.93)	45.8 (2.38)	-9.84 (-12.499, -7.1790)	-7.412 (55)	0.000*
** Significant at p< 0.05*					

A cross-sectional study involving two groups of pre-school teachers and no sampling was done due to limited number of subjects where all preschool teachers in Rantau Panjang and Pasir Mas district were involved (These two districts are in the same Jajahan of Pasir Mas). Rantau Panjang preschool teachers as the control group (n=26) and Pasir Mas pre-school teachers as the case group (n=31). The purpose of having a control group was to ensure that it is conclusive whether or not the oral health seminar was responsible for the observed changes in oral health knowledge.

Research tool / Questionnaire

The structured questionnaire which was developed via group discussion with the experts in oral health for face and content validity and it was pilot tested with a sample of 31 pre-school teachers in Rantau Panjang for its reliability and validity. (α = *.77*). It consists of information about demographic background, perceived oral health status, oral health knowledge and working environment. Total knowledge score was constructed by counting the scores for each variable according to the following responses: score of 2 for each "true" answer, 0 for each "false" answer and 1 for each "not sure" answer. Thus, higher knowledge score indicating better oral health knowledge. The "not sure" option was used to reduce the tendency for the subject to guess on items they do not know.

Data Collection

The pretest questionnaire for the control group was administered on 11th September 2004 and for the case group, it was administered on 25th September 2004, just before the "Oral Health Seminar" started. While for the posttest, the same structured questionnaire was administered about two weeks after pretest. This short pretest/posttest time interval was used to minimize the effect or to reduce contaminants from other influences or factors that can contribute to the observed changes. For both pretest and posttest, all participants were required to fill in the questionnaire anonymously and the identification code was used to match the pre and post surveys for statistical analysis.

Data analysis

The SPSS 11.5 for Windows statistical software was used for data management and data was found to meet all the assumptions of analysis. To detect mean difference between control and case group, an independent t-test was used, while for the difference between pretest and posttest, a paired sample t-test was used.

Results

Socio-demographic background

The age distributions of the control (Rantau Panjang pre-school teachers) and case group (Pasir Mas pre-school teachers) were normally distributed with the mean age of 41.3 years old and 37.1 years old respectively and majority of them are married (80.8 % in control and 87.1% in case group). In terms of educational level, 30.8 % of the control group with diploma whereas in the case group, there was only 9.7 % with diploma. Demographic data is illustrated in Table 1.

Oral health knowledge

a. Pretest knowledge of the control and case group

For the question regarding dental caries and its prevention, more than 80% of the participants knew that brushing teeth, regular dental check-up and fluoride can prevent dental decay but only 29.0% knew about flossing teeth using dental floss. In terms

Table 3: Paired t-test of a control and case group

	Pretest mean (sd) (t1)	Posttest Mean (sd) (t2)	Mean score Difference (95%CI)	t-staristic (df)	*P* value
Knowledge score of control (n=26)	34.0 (7.00)	36.0 (6.93)	2.04 (1.08, 3.00)	4.377 (25)	.000*
Knowledge score of case (n=31)	35.1 (4.11)	45.8 (2.38)	10.74 (9.20, 12.29)	14.203 (30)	.000*
** Significant at p< 0.05*					

of periodontal disease, more than 90% knew that bleeding gums while brushing teeth is one of the sign and symptoms but only 41.9% and 77.4% gave positive answers about loose teeth and bad breath. The rest gave either uncertain or false answers. Responses to the dental erosion questions, more than 50% gave either uncertain or false answers and for the oral cancer, there were about 70% of the subjects gave positive responses.

b. Posttest knowledge of the case group

There was a significant improvement in knowledge towards oral health where more than 90% of the respondents gave positive and correct answers for questions regarding dental caries, periodontal diseases, dental erosions and oral cancer.

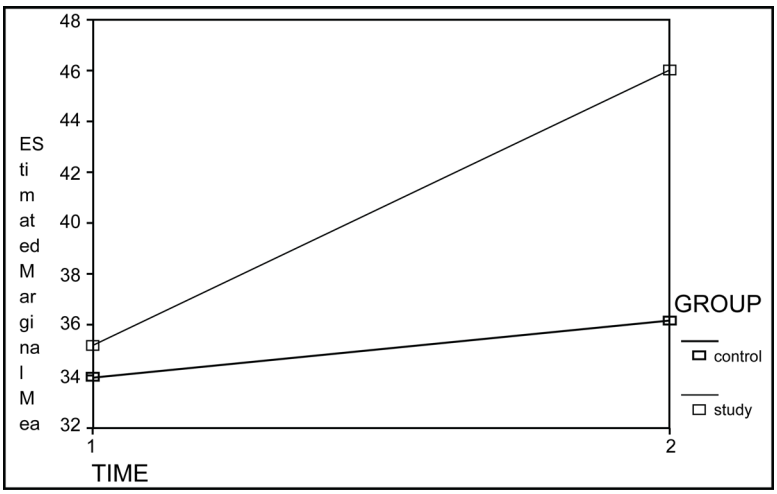
Overall changes and improvement in knowledge towards oral health for both groups can be seen in Table 2. Despite the difference in age and educational level between the control and case group, the baseline oral health knowledge scores (pretest score) between them were not significantly different which was proven statistically by Independent t-test with p-value of 0.450 (> 0.05). The posttest results showed that there was a significant difference in the mean knowledge score between the two groups, with p-value of < 0.001. The case group had achieved mean knowledge score of 45.8, whilst in the control group the mean knowledge score was only 36.0. (Table 3, Figure 1)

Discussion

The purpose of this study was to evaluate the effectiveness of the seminar to train oral health educator among non-health professionals. Consistent with the prior studies of oral health knowledge among adults (including parents, health-care workers and teachers) (20-24) we found that the level of oral health knowledge among preschool teachers in Pasir Mas district prior to attending oral health seminar was very limited, however they had some understanding about oral health.

The paired t-test of the preschool teachers' pretest and posttest scores on knowledge towards oral health showed that there was significant improvement in the oral health knowledge in both control and case group. Significant increase in knowledge of those who did not attend the oral health

Figure 1: Estimated marginal means of knowledge score between the groups



seminar may be influenced by mass media such as television and radio and also by printed media like newspaper, magazines and pamphlets. Thus we can say that mass media is a powerful and influential force in modern society. However by looking at overall results, the magnitude of oral health knowledge gain through oral health seminar is more. Besides that, preschool teachers would be a better health educator and this would encourage community participation in health care. Hence, health is no longer the sole responsibility of health personnel but being shared by all parties.

Limitations

Despite the encouraging results, there are a few limitations noted in this study and a primary one was the small sample size. Secondly, we did not have the opportunity to conduct follow-up assessment to determine whether the improvements in oral health knowledge were maintained or dissipated over time. Finally although the results suggest that oral health seminar has increased preschool teachers knowledge towards oral health but we were unable to determine whether it has an impact on actual behavior.

Recommendations

Prior to any oral health promotion in preschool, it is better to conduct a seminar to educate the preschool teachers which may help them to empower the children to take responsibility for their own health. Secondly is to have the follow-up assessment to see whether improvement in oral health knowledge is still maintained and to determine whether the change in knowledge of the preschool teachers has an impact on attitude and practice of the preschool children.

Conclusion

The result of this study suggests that oral health seminar is effective at training preschool teachers in Pasir Mas (n=33) as oral health educator by improving their knowledge towards oral health. In addition to that, dental education through advertisements (either by mass media or printed media) and preventive unit of Ministry of Health Malaysia, seem to improve the knowledge of a community towards oral health however, extra effort is required if oral health activities are targeted to special groups. Finally, oral health educators need to be trained to monitor the programme introduced and they are not necessarily oral health professionals.

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References

1. Sheiham A. Changing trends in dental caries. *Int J Epidemiol* 1984; **13**:142-147. [PubMed Abstract]
2. Sheiham A. Dietary effects on dental diseases. *Public Health Nutrition* 2001; **4(2B)**: 569-591.
3. Okunseri C, Badner V, Kumar J, D Cruz G. Dental caries prevalence and treatment need among racial/ ethnic minority schoolchildren. *New York State Dental Journal* 2002; **68**: 20-23.
4. Wong MCM, Lo ECM, Schwarz E, Zhang HG. Oral health status and oral health behaviors in Chinese children. *Journal of Dental Research* 2001; **80**: 1459-1465.
5. Suzanne MC, Sophia S. Dental caries in developing countries. *New York State Dental Journal* 1998; **64(2)**: 32-39.
6. Calonge N. Prevention of dental caries in pre-school children : Recommendations and rationale. *American Family Physician* 2004; **70(8)**:1529-1532.
7. Truin GJ, Van Rijkom H.M, .Mulder J, Vant Hof M.A. Caries trends 1996-2002 among 6-and 12-year-old children and erosive wear prevalence among 12-year-old children in the Hague. *Caries Research* 2005; **39**: 2-8.
8. Julie MWT, Donald SA, Don CR, David MOS. Dental caries prevalence and treatment levels in Arizona preschool children. *Public Health Reports* 1997; **112(4)**: 319-330.
9. Li Y, Wang W. Predicting caries in permanent teeth from caries in primary teeth: An eight-year cohort study. *Journal of Dental Research* 2002; **81(8)**: 561-566.
10. Denise HA. A hidden epidemic: Dental disparities among children. *The Journal of School Health* 2003; **73(1)**: 38-40.
11. Erica W. Dental caries: A nation divided. *Canadian*

Medical Association, Journal 2002; **167(9)**: 1035.

12. Oral Health Division, Ministry Of Health Malaysia: National Oral Health Survey of School Children 1997. (NOHSS '97).
13. Stecksen-Blicks C, Sunnegardh K, Borssen E. Caries experience and background factors in 4-year-old children: Time trends 1967-2002. *Caries Research* 2004; **38**: 149-156.
14. Davies WIR: An oral health survey in Southern China, 1997: Preface. *Journal of Dental Research* 2001; **80(5)**: 1451-1452.
15. Health Management Information system (Dental Subsystem), Information and Documentation System Unit, Ministry of Health Malaysia: Annual Report 2001.
16. Oral Health Division, Ministry of Health Malaysia: National Oral Health Plan. 2002.
17. Meyer-Lueckel J, T Satzinger AMK. Caries prevalence among 6-16 year-old students in Jamaica 12 years after the introduction of salt fluoridation. *Caries Research* 2002; **36(3)**: 170-173.
18. Oral Health Division, Ministry of Health, Malaysia: Guidelines on oral health care for pre-school children. 2003.
19. Schou L, Locker D. 1997. Principles of oral health promotion. In: Community oral health. Reed Educational & Professional Publishing Ltd.. pp 182.
20. Al-Ansari J, Honkala E, Honkala S. Oral health knowledge and behavior among male health sciences college students in Kuwait; *BMC Oral Health* 2003: **3**: 1-8.
21. Lin HC, Wong MCM, Wang ZJ, Lo ECM. Oral Health Knowledge, attitudes, and practices of Chinese adults; *Journal of Dental Research* 2001: **80(5)**: 1466-1470.
22. Leous PA, Peterson PE, Bandaryk EA, Polanskaya LN. Oral health behavior and awareness of mothers of 7-year-old children and school teachers in Belarus. [PubMed Abstract]
23. Toivanen T, Honkala E, Tala H : The knowledge of pregnant womenon caries prevention in the United Arab Emirates. [PubMed Abstract]
24. Danila I, Hanganu C, Peterson PE, Amariei C, Podariu A, Samoila A: Changes in oral health behavior, knowledge and attitudes of mothers and schoolteachers in Romania from 1993 to 2003. [PubMed Abstract]