

Effectiveness of oral health education on eight to ten year old school children in rural area of Magway Region, Myanmar

Kyu Kyu Swe (✉ kyswe@gmail.com)

Research article

Keywords: Oral health education, oral health knowledge and behavior

Posted Date: January 22nd, 2020

DOI: <https://doi.org/10.21203/rs.2.21544/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published on January 2nd, 2021. See the published version at <https://doi.org/10.1186/s12903-020-01368-0>.

Abstract

Background: Oral diseases are common and widespread around the world. Many oral health problems are preventable and early onset is reversible. Myanmar faces many challenges in rendering oral health services and about 70 percent of total population resides in rural areas. These relate to the availability and accessibility of oral health services. Therefore, oral health education is one key element to prevent oral diseases and to promote oral health.

Methods: A quasi-experimental study was carried out at Basic Education Middle Schools in rural areas of Magway Township to study the effectiveness of oral health education on knowledge and behavior of eight to ten years old school children. A total of 220 school children, 110 from intervention school and 110 from control school, participated in this study from 2015 to 2017. Data for knowledge and behavior were collected before and after intervention in the two groups by using self-administered questionnaire. Tooth brushing method data were collected by direct observation with checklist. Oral health education was provided at eight weekly intervals for one year in the intervention group. After one year and six months, oral health knowledge and behavior were determined in the intervention group only to measure retention. Chi-square test, two samples t test, One way repeated measure ANOVA were used for data analysis. The study was approved by the Ethics Review Committee of University of Public Health in Yangon, Myanmar.

Results: After education, a positive net effect of intervention and significant improvement was found in the intervention group compared to the control group regarding oral health knowledge ($p < 0.05$) except one that is foods that can cause dental caries ($p = 0.107$) and behavior ($p < 0.001$). Retention of mean \pm standard deviation on knowledge and behavioral scores were 2.45 ± 1.12 , 3.79 ± 1.12 , 4.07 ± 0.98 and 1.56 ± 0.90 , 3.60 ± 1.21 , 3.24 ± 1.31 at baseline, at one year after education and at six months after cessation of education respectively, and, total knowledge and behavioral scores were significantly improved ($p < 0.001$) among the school children in the intervention group.

Conclusion: The repeated oral health education was effective to promote and sustain oral health knowledge and behavior. Word counts: 342

Background

One cannot be healthy without oral health. Oral health and general health should not be interpreted as independent entities. Oral diseases can affect the ability to work at home, at school or on the jobs [1]. Children with poor oral health tend to struggle in school, may lack self-esteem and may have less success later in life. Healthy baby teeth are extremely important for eating, smiling, talking and keeping the space for adult teeth [2]. Oral health status has a direct impact on general health and conversely, general health influences on oral health. Children who suffer from poor oral health are 12 times more likely to have restricted activity days than those who do not [3]. In the United States, more than 50 million school hours are lost annually because of oral health problems which affect children's performance at school [4].

Dental caries affects 60-90% of school age children and most of the adults. Periodontal disease is prevalent in 50-90% of adults, becoming severe in 10-15% of them, while gingival diseases occur in majority of children and adolescents of Kuwait [5]. Although dental caries is a preventable disease, it is the most prevalent diseases in children of America [1]. In Myanmar, knowledge, attitude and practice pertaining to oral health among rural population were low [6] and oral health status among five year and twelve year old children were not satisfactory [7]. Dental public health care services are required more than before to reduce high level of dental caries in twelve to thirteen year age group in Myanmar [8]. Three month oral health education gave positive effect on total KAP scores and plaque scores of the study group aged twelve year old school children in Myanmar [9]. Myanmar populations have low opportunity to take sufficient oral health education because of inadequate dentist population ratio [10].

In order to assess the magnitude of the preventive task it is necessary to know the oral health situation of the school children. Myanmar faces many challenges in rendering health care services including oral health services and about 70 percent of total population resides in rural areas. These relate to the availability and accessibility of oral health services. Therefore, oral health education plays a pivotal role to solve the oral health problems, to prevent common oral diseases and to promote oral health of the rural population. Oral health promotion through schools is recommended by the World Health Organization for improving oral health and for prevention of dental diseases among school children. In Myanmar, oral health education programs are already existed and oral health services are provided to the school children yearly by a dental surgeon as part of functions of school health team but these oral health programs are not strengthened. The number of dentist is inadequate to provide dental services effectively to the school children and oral health education is believed to be an effective method for promoting oral health. The children aged eight to ten years among the school children are suitable for identifying oral health status and for providing primary prevention because of mixed dentition, both primary teeth and permanent teeth. Hence the current study was planned to obtain updated information on the oral health situation of the school children in Myanmar and supported the role of educational program in promoting oral health and preventing the common oral diseases at early stage in the children. Furthermore, this study was an important foundation to stimulate the development of oral health awareness among the community.

Methods

Study design, area, population and period

A quasi-experimental nonequivalent control group study design was carried out in randomly selected two Basic Education Middle Schools at rural area of Magway Township from 2015 to 2017 to determine the effectiveness of oral health education on oral health knowledge and behavior of eight to ten year old school children. A total of 220 school children, 110 from intervention school and 110 from control school, participated in this study. Eight to ten year old healthy children who are attending the selected middle schools were included and those who are unwilling to participate in the study and not present on the day of data collection were excluded.

Sample size and sampling procedure

The sample size was calculated by $n = (z_{\alpha} + z_{1-\beta})^2 (p_c q_c + p_e q_e) / d^2 + 2/d + 2$ (Fleiss, 1981) and a drop-out rate of 20% for each group was considered. The total sample size was 220. Prior to conduct the study, permission was taken from Township Educational Officer and Township Medical Officer. Out of a total of 47 BEMSs in Magway Township, there were only four in urban. To obtain the required sample, in the first stage, two BEMSs from rural area, and in the second stage, 110 students from each school, were randomly selected.

Data collection method

The research question was developed and reviewed by the experienced dental specialist. The question consists of demographic characteristics, knowledge and behavior on oral health. Oral health education (OHE) was given to the intervention group only at eight weekly intervals for one year. An oral health education session for a period of about 45 minutes was prepared on key oral health messages such as structure and functions of teeth, types of dentitions, causes and prevention of common oral diseases, importance of brushing teeth twice daily, proper tooth brushing technique, importance of regular dental visit. Chalk and blackboard, dent form model, charts, toothbrush and toothpaste were used as oral health education aids. Proper tooth brushing technique (modified bass technique) was demonstrated on a dent form model. After completion of the whole study, an oral health education session was also conducted for the children in the control group. A pilot survey was done on the 30 students to ensure the clarity of interpretation. A visit was paid to each school before data collection to discuss the research procedure with the school headmaster and written informed consent was obtained from the caregivers. At the beginning of the study, the baseline data were collected in both groups by using a self-administered questionnaire except one behavioral question that is 'method of tooth brushing'. It was collected by direct observation with the checklist. The questionnaires, originally constructed in English and translated into Myanmar, were given and filled up by the children under the supervision of the research team members with the help of class teachers to ensure that all questions were answered. Interpersonal communications were not allowed during answering. After one year period from collection of the baseline data, post intervention data were collected in the two groups using the same questionnaire as at baseline. After one year and six months, retention of proper knowledge and behavior were determined in the intervention group only. Toothbrush and toothpaste were provided to all participant children in both groups before and after intervention.

Data management and analysis

The data were checked for completeness and consistency daily and analyzed by using SPSS version 16.0. Descriptive statistics was computed for all variables. Differences between intervention and control groups responded to the knowledge and behavior questions by correct answers before and after

intervention were calculated. The net effect of the intervention programme was estimated by subtracting the percentage change pre-to post-intervention in control students from that for the intervention students. One way repeated measure ANOVA with Bonferroni correction (Post Hoc test) was used to determine the retention of proper knowledge and behavior on oral health at three different points in time, at baseline, at one year after OHE, at six months after cessation of OHE, in students who received OHE at eight weekly intervals for one year. The level of statistical significance for all tests was set at 0.05.

Results

Table 1 shows the demographic characteristics of the school children in the two groups at baseline and one year after oral health education. Age distribution from eight to ten year before and after intervention were 19.1%, 58.2%, 22.7% in the intervention group and 14.5%, 20.9%, 64.5% in the control group, respectively. According to the gender, boy and girl distribution before and after intervention were 43.6%, 56.4% in the intervention group and 51.8%, 48.2% in the control group, respectively. Table 2 shows correct knowledge and proper behavior on oral health among the school children between the two groups. In the intervention group, the correct proportion was higher in after intervention than in before regarding all knowledge questions and, in the control group, the correct response rate before and after intervention were nearly the same except main cause of tooth decay and gum diseases. In comparing the two groups before intervention, about 16% of intervention students and 12% of control students gave the true answer with regard to main cause of tooth decay. The majority of school children in both groups gave the true answer with regard to behavior about devices using in tooth brushing before as well as after intervention. Before intervention, about 7% of school children in intervention group and nearly 5% of school children in control group used dental floss to remove food debris stuck between the teeth. Regarding pattern of tooth brushing, nearly 5% in intervention group and only 3% in control group brushed their teeth according to the recommended method. Before intervention, no significant differences were found between the two groups in four out of five knowledge questions and in three out of five behavior questions ($p>0.05$). These were knowledge about the main cause of gum diseases and behavior about frequency and occasion of tooth brushing ($p<0.05$). After intervention, significant differences were found between the two groups in four out of five knowledge questions and in all behavior questions ($p<0.05$). The only one knowledge question shows no significant differences between the two groups was 'foods that can cause dental caries' ($p>0.05$). Table 3 shows percentage changes in response to knowledge and behavior on oral health before and after intervention between the two groups and a positive effect of oral health education for a period of 45 minutes at eight weekly intervals for one year was noted. Table 4 shows mean knowledge and behavior scores on oral health in the intervention group only. There were 2.45 ± 1.12 , 3.79 ± 1.12 , 4.07 ± 0.98 and 1.56 ± 0.90 , 3.60 ± 1.21 , 3.24 ± 1.31 at baseline, at one year after OHE and at six months after cessation of OHE, respectively. Statistically significant effect of eight weekly interval for one year OHE was found on total knowledge and behavior scores in the intervention group ($p<0.001$). Table 5 shows highly significant differences between two different points in time (baseline vs one year after OHE and baseline vs six months after cessation of OHE) regarding total knowledge and behavior scores ($p<0.001$), and, no significant difference between one year after OHE and six months after cessation of

OHE ($p=0.159$) in knowledge and ($p=0.060$) in behavior. It was shown that the school children in the intervention group had the ability to maintain the correct knowledge and behavior related to oral health even though the OHE session was stopped for six months.

Discussion

At the beginning of the study, minimum age of the school children in both groups was eight year and maximum age was ten year. The duration of the study lasted for one and half year. There was no attrition in both groups after intervention. The correct response rates were more or less the same between the two groups before intervention in almost all of knowledge questions except one that is question concerning with main cause of gum diseases, in which correct answer rate of control students was significantly greater than that of intervention students. It may be possible that even in the absence of health education, some children might have tried to search and get correct answers and gain knowledge through various sources like social media, TV, toothpaste advertisements, etc. After one-year-intervention, significant differences were observed between the two groups in almost all of knowledge questions except one that is question concerning with foods that can cause dental caries. This may be attributed to the school co-curriculum wherein some general information about unhealthy effect of sweetened foods and drinks on teeth is taught to the school children in the primary classes. No significant differences were found between the two groups before OHE in three out of five behavioral questions and with regard to frequency and occasion of tooth brushing, significantly more of the students in the intervention group brushed their teeth twice per day and also cleaned their teeth in the morning before breakfast and at night before going to bed compared with their control counterparts. This might be due to unequal accessibility and availability of dental health services among the students. However, the proportion of correct behavior was significantly higher in all behavioral items for the intervention group following OHE. This may be because of methods applied and materials used in the OHE session. When the present study assessed the percentage changes in response to knowledge and behavior on oral health before and after intervention between the two groups, a positive net effect of intervention was observed. The improvement in overall knowledge and behavior was found in the intervention group as compared to the control group after OHE which may be ascribed to the mode of OHE. It was delivered to the students by means of an interactive talk around key oral health messages and the students who can give the correct answer were rewarded to participate actively and to get more interest in the OHE session. Well prepared and repeated OHE which would probably improve knowledge and enhance behavior. The OHE emphasized the importance of frequency, occasion and method of tooth brushing, use of tooth brush and tooth paste, and use of dental floss. A large teeth model was used to demonstrate the recommended method of tooth brushing to visualize all the students and after demonstration, some students were picked up in front of the class to show the method of tooth brushing step by step to know whether the students understand well. The finding of the present study was in accordance with an intervention study conducted in Ireland wherein an oral health intervention for six weeks was done amongst primary school children aged seven to twelve year and positive changes were observed in oral health knowledge and behaviors [11]. Other studies done in Chandigarh, Northern India [12], in Tanzania [13] and Greece [14] reported that school

based OHE program was highly significant improved knowledge and behavior. In a study done in Kyauktan and Tharkayta Townships of Yangon Region in Myanmar, significant improvement of knowledge, attitude and practice scores on oral hygiene was found between the baseline and three months after intervention among 12 year old school children [9]. In India, a systematic review was conducted in a total number of 40 articles to assess the effectiveness of oral health education programs on knowledge, attitude, practice and oral health status. In their review, they reported that oral health education was effective in improving knowledge on oral health in all studies, however, with regard to practice outcome, thirteen studies were found to be effective and two studies were not effective [15]. These disparities might be due to differences in target age group, methods and duration of oral health education program and background characteristics of the study subjects. The present study showed that the eight weekly oral health educations for one year had a statistically significant effect on total knowledge and behavior scores of the oral health among the school children in the intervention group even though stopping of the education program for six months after one-year OHE and it was found that the students in the intervention group had sustainability on positive knowledge and behavior. In similar to the present study, a study done in India documented that reinforcement through repeated OHE sessions in the intervention schools resulted in significant improvement in oral health knowledge and practices even after cessation of the program [16]. Another study done in the northwest of England reported that schools with more frequent exposures to the program had better scores than schools with fewer exposures [17]. A study in Karachi of Pakistan showed that one-time teacher led OHE was ineffective compared to repeated and reinforcement OHE in improving the oral health knowledge, behavior and oral hygiene status [18]. OHE is a feasible way to reach out all sections of the children whether rich or poor, near or far, developed or underdeveloped. Impartation of OHE improves oral health knowledge and behavior of the students which will be passed on to their family members and neighbor community and has had effect on the whole community of the country. The results of this study can be generalized to the school children in Myanmar because schools and students are randomly selected in collecting the data for measuring the outcome variables. However, the study procedure had some limitations. Teachers and caregivers were not included in the OHE sessions, it might have affected the effectiveness of OHE since they have daily contact with the students and may be essential for the achievement of long-term benefits.

Conclusions

The repeated oral health education comprising of lecturing with interactive talk, demonstration and supervised tooth brushing method at eight weekly intervals for one year was found to be effective to promote and sustain correct knowledge and behavior among the school children.

Abbreviations

SPSS: Statistical Package for Social Science

OHE: Oral health education

vs: Versus

Declarations

Acknowledgements

We would like to mention our heartfelt thanks Township Medical Officer and Township Educational Officer in Magway Township, Magway Region, Myanmar for their kind permission to conduct this study and school children who actively participated. We also thank Prof Dr Nay Soe Maung, Rector (retired), University of Public Health, Yangon (Myanmar), Prof Dr Khay Mar Mya, Rector (retired), University of Public Health, Yangon (Myanmar), Dr Soe Min Naing, Associate Professor, Department of Preventive and Social Medicine, University of Medicine, Magway (Myanmar) for their kind assistance and advice.

Funding

The author (s) received no specific funding for this research project.

Availability of data and materials

Data are available upon request by co-authors and reviewers.

Authors' contribution

KKS, HTS and SHA developed the concept and design of the study. KKS and AKS involved in data collection and observation. KKS and HTS involved in analysis of data and interpretation of the result. All authors read and approved the final manuscript.

Competing interests

The authors declare that there is no competing interest among them.

Ethical approval and consent to participate

Ethical clearance was obtained from Ethical Review Committee of University of Public Health, Yangon, Myanmar. Written informed consent was obtained from the caregivers and verbal consent was obtained from the school principal and class teachers. Written informed assent was obtained from all participant school children.

Author details

¹University of Community Health, Magway, Myanmar.

²Maxillo-facial department, Teaching Hospital, Magway, Myanmar.

³Department of Preventive and Community Dentistry, University of Dental Medicine, Yangon, Myanmar.

References

1. Evans CA, Kleinman DV: **The surgeon: General's report on America's oral health: Opportunities for the dental profession.** *Journal of the American Dental Association* 2000, 131 (Suppl 12): 1721–1728.
2. Ontario Association for Public Health Dentistry: *Oral Health: Different Ages/Different Stages: Birth to 12 Years.* 2009.
3. General Accounting Office: Oral health: Dental disease is a chronic problem among low-income populations: *Report to Congressional Requesters.* United States; 2000.
4. Office of Disease Prevention and Health Promotion: *Healthy People. 2010, U.S. Department of Health and Human Services, Washington, DC, USA;* 2001.
5. Al Mutawa SA, Shyama M, Al Duwairi Y, Soparkar P: **Oral hygiene status of Kuwaiti school children.** *Eastern Mediterranean Health Journal* 2011, 17 (Suppl 5): 387–391.
6. Ogawa H, Soe P, Myint B, Sein K, Kyaing MM, Maw KK, Oo HM, Murai M, Miyazaki H: **A pilot study of dental caries status in relation to knowledge, attitudes and practices in oral health in Myanmar.** *Asia-Pacific Journal of Public Health* 2003, 15 (Suppl 2): 111–117.
7. Chu CH, Chau MH, Hui SY, Lo CM, Wong SW: **Oral health status and behaviours of children in Myanmar - A pilot study in four villages in rural areas.** *Oral Health and Preventive Dentistry* 2012, 10 (Suppl 4): 365–371.
8. Aung-Zaw-Zaw-Phyo, Chansatitporn N, Narksawat K: **Oral health status and oral hygiene habits among children aged 12-13 years in Yangon, Myanmar.** *Southeast Asian Journal of Tropical Medicine and Public Health* 2013, 44 (Suppl 6): 1108–1114.
9. Zar-Chi-Kyaw-Myint, Khin-Khin-Maung, Saw-Htun-Aung, Ko-Ko-Soe: **Effectiveness of Oral Health Education on 12 year old school children in the selected townships of Yangon region in Myanmar.** *Master Thesis.* University of Dental Medicine, Yangon; 2014.
10. Kaung-Myat-Thwin: **Provision of Quality Dental Health Care Services.** *35th Myanmar Dental Conference and 16th FDI-MDA Joint Educational Meeting, World Dental Federation, Myanmar Dental Association, National Theater, Yangon: 7-10 January 2015.*
11. Friel S, Hope A, Kelleher C, Comer S, Sadlier D: **Impact evaluation of an oral health intervention amongst primary school children in Ireland.** *Health Promotion International* 2002, 17 (Suppl 2): 119–126.
12. Gauba A, Bal IS, Jain A, Mittal HC: **School based oral health promotional intervention: Effect on knowledge, practices and clinical oral health related parameters.** *Contemporary Clinical Dentistry* 2013, 4 (Suppl 4): 493.
13. Astrom AN, Mashoto KO: **Changes in oral health related knowledge, attitudes and behaviours following school based oral health education and atraumatic restorative treatment in rural Tanzania.** *Norsk Epidemiologi* 2012, 22 (Suppl 1): 21–30.
14. Angelopoulou MV, Kavvadia K, Taoufik K, Oulis CJ: **Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional**

lecturing in 10-year-old children. *BMC Oral Health* 2015, 15 (Suppl 1).

15. Nakre P, Harikiran A: **Effectiveness of oral health education programs: A systematic review.** *Journal of International Society of Preventive and Community Dentistry* 2013, 3 (Suppl 2): 103.
16. Shenoy RP, Sequeira PS: **Effectiveness of a school dental education program in improving oral health knowledge and oral hygiene practices and status of 12- to 13-year-old school children.** *Indian Journal of Dental Research* 2010, 21 (Suppl 2): 253–259.
17. Worthington HV, Hill KB, Mooney J, Hamilton FA and Blinkhorn AS: **A cluster randomized controlled trial of a dental health education program for 10-year-old children.** *J Public Health Dent* 2001, 61 (Suppl 1): 22-7.
18. Haleem A, Khan MK, Sufia S, Chaudhry S, Siddiqui MI and Khan AA: **The role of repetition and reinforcement in school based oral health education -a cluster randomized controlled trial.** *BMC Public Health* 2016, 16 (Suppl 2).

Tables

Table 1 Demographic characteristics of the school children in intervention group (n=110) and control group (n=110)

Variables	Categories	Intervention group n (%)	Control group n (%)
Age (year)	8	21(19.1)	16(14.6)
	9	64(58.2)	23(20.9)
	10	25(22.7)	71(64.5)
Gender	Boy	48(43.6)	57(51.8)
	Girl	62(56.4)	53(48.2)

Table 2 Correct knowledge and proper behavior on oral health between the two groups

Variables	Categories	Intervention	Control	p-value
		n (%)	n (%)	
Knowledge questions				
The main cause of tooth decay	At baseline	17(15.5)	13(11.8)	0.432
	After one year	79(71.8)	20(18.2)	<0.001
The main cause of gum diseases	At baseline	29(26.4)	64(58.2)	<0.001
	After one year	60(54.5)	41(37.3)	0.010
Prevention of dental caries and periodontal diseases	At baseline	78(70.9)	85(77.3)	0.281
	After one year	100(90.9)	88(80.0)	0.022
Foods that can cause dental caries	At baseline	71(64.5)	72(65.5)	0.888
	After one year	82(74.5)	71(64.5)	0.107
Development of oral cancer	At baseline	74(67.3)	84(76.4)	0.134
	After one year	96(87.3)	82(74.5)	0.016
Behavior questions				
Frequency of tooth brushing	At baseline	39(35.5)	25(22.7)	0.038
	After one year	74(67.3)	7(6.4)	<0.001
Occasion of tooth brushing	At baseline	21(19.1)	8(7.3)	0.010
	After one year	70(63.6)	4(3.6)	<0.001
Devices using in tooth brushing	At baseline	99(90.0)	92(83.6)	0.163
	After one year	106(96.4)	84(76.4)	<0.001
Device used to remove food debris stuck between the teeth	At baseline	8(7.3)	5(4.5)	0.391
	After one year	51(46.4)	4(3.6)	<0.001
Pattern of tooth brushing (by direct observation)	At baseline	5(4.5)	3(2.7)	0.721
	After one year	95(86.4)	6(5.5)	<0.001

Table 3 Percentage change in responses to knowledge and behavior on oral health among the school children in both groups before and after intervention

Knowledge and behavior questions on oral health	% difference between before and after intervention		Net effect of intervention (% change)
	Intervention	Control	
Knowledge questions			
The main cause of tooth decay	+56.37	+6.36	+50.01
The main cause of gum diseases	+28.19	-20.91	+49.1
Prevention of dental caries and periodontal diseases	+20	+2.73	+17.27
Foods that can cause dental caries	+10	-0.9	+10.9
Development of oral cancer	+20	-1.81	+21.81
Behavior questions			
Frequency of tooth brushing	+31.82	-10.91	+42.73
Occasion of tooth brushing	+44.55	-3.63	+48.18
Devices using in tooth brushing	+6.36	-7.28	+13.64
Device used to remove food debris stuck between the teeth	+39.09	-0.91	+40.00
Pattern of tooth brushing (by direct observation)	+81.81	+2.72	+79.09

Table 4 Oral health scores at three different points in time in the intervention group (n=110)

Variables	Categories	Mean \pm SD	p-value
Knowledge scores	At baseline	2.45 \pm 1.12	<0.001
	At one year	3.79 \pm 1.12	
	At one and half year	4.07 \pm 0.98	
Behavior scores	At baseline	1.56 \pm 0.90	<0.001
	At one year	3.60 \pm 1.21	
	At one and half year	3.24 \pm 1.31	

SD: standard deviation

Table 5 Retention of oral health knowledge and behavior in the intervention group (n=110)

Variables	Categories	Mean diff	95% CI for diff		p-value
			Lower	Upper	
Knowledge scores	Baseline vs one year	-1.345	-1.69	-1.00	<0.001
	One year vs one and half year	-0.282	-0.63	0.07	0.159
	Baseline vs one and half year	-1.627	-1.98	-1.28	<0.001
Behavior scores	Baseline vs one year	-2.04	-2.41	-1.67	<0.001
	One year vs one and half year	0.36	-0.01	0.74	0.060
	Baseline vs one and half year	-1.67	-2.05	-1.30	<0.001

Diff: difference, CI: Confidence Interval, vs:versus