

ASSESSMENT OF AN EDUCATIONAL PROGRAM FOR ORAL HEALTH IN A GROUP OF EGYPTIAN ELDERLY POPULATION: BEFORE AND AFTER STUDY

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ABSTRACT

Aim: To assess the geriatric oral health using the Geriatric Oral Health Assessment Index (GOHAI) before and after an oral health educational program.

Subjects and method: This study was conducted in El-Wafaa and El- Amal elderly home, at Cairo, Egypt. This study was eighty-five (85) including forty-four (44) males and forty-one (41) females aging from 65 to 87 years old. The program was done in four phases: I. Pilot study, II. Baseline assessment of the targeted geriatric population, III. Oral Health Education. IV. Reassessment after 3 months of the health educational session using the GOHAI. GOHAI contained 12 closed ended multiple choice questions which were evaluating three dimensions of Oral health: 1. Physical function .2. Pain or discomfort.3. Psycho-social function. The materials used in the study were power point presentation, poster, flyer, cast and videos.

Results: The results can be concluded that before the program, the mean values for all responses under study ranged between 1.24 estimating the concern about teeth, gums and dentures, to 1.40 estimating the happiness with looks of teeth or dentures. On the other side after study program the mean values for all responses under study ranged between 3.96 estimating the limitations during eating to 4.45 estimating the feeling of eating in front of others. The rate of change in the responses for the study was twice as high for all questions compared to the responses before applying the program.

Conclusion: The total and the most of the studied elderly had unsatisfactory knowledge and inadequate reported practice in pretest respectively. Which were improved among the vast majority in posttest.

Recommendations: Improvement of the dental checkup for elderly in all health care facilities, adding oral health course in educational curriculum of nursing institutes and faculties to increase awareness of oral health among the nursing staff which will reflect on society.

KEY WORDS: *Elderly, Oral Health, GOHAI, OHRQoL*

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INTRODUCTION

The number and percentage of older adults in most countries around the world are rapidly increasing, The United Nations estimates that there were 703 million older adults (aged 65 years or above) globally in 2019 and this number will double to 1.5 billion by 2050.

The estimated proportion of older adults in 2019 was 9% globally and it is expected to increase to 16% by 2050 ⁽¹⁾.

Life expectancy in Egypt rose from 73.9 years in 2019 to 74.3 years in 2021 (73.4 years for males and 75.9 for females, The data showed that the number of elderly people (60 years and over) in Egypt reached 6.8 million, representing 6.7% of the total population.

Health education programs are necessary for informing, motivating, and helping populations to adapt and maintain healthy practices. Good communication will help in health education programs using different aids as posters, flyers, lectures, and audiovisual aids.

Significance of the study: There is a distinct lack of policy on prevention in oral health in Egypt. Health is an essential human need to improve the quality of life.

Aim of the study: Assessment of geriatric oral health using the Geriatric Oral Health Assessment Index questionnaire (GOHAI) before and after an oral health educational program.

SUBJECTS AND METHOD

Research design: This was a before and after study to compare the impact of oral health educational program on geriatric oral health using the Arabic version of GOHAI ⁽²⁾ in an Egyptian elderly home in Nasr city Egypt.

Study Setting: The study carried out in EL Wafaa and El Amal elderly home at Cairo.

Sample: Eighty-five (85) including forty-four (44) males and forty-one (41) females aging from 65 to 87 years old, they were chosen by using purposive sample for the application of educational program.

Tools for Collecting Data: -This study includes one tool which is Interview questionnaire form to assess elderly's knowledge. It includes:

Part (1): demographic data as age, sex, marital status, and occupation.

Part (2): the (GOHAI) in English which was translated in Arabic language ⁽²⁾ contained 12 closed ended multiple choice questions which were evaluating three dimensions of Oral health ⁽³⁾:

- 1) **Physical function:** representing the pattern of eating, speech and swallowing.
- 2) **Pain or discomfort:** representing the use of medication to relieve pain or discomfort
- 3) **Psycho-social function:** representing the worry or concern about oral health, dissatisfaction with appearance and social contacts.

Method

I. Administrative procedure: An official letter approval was gained from the head of Military Medical Academy in Egypt to the director of the El- Wafaa and El Amal elderly home.

II. Pilot study: Before implementing the main study, a pilot study was done on 10% of the residences to test the interaction of the participants towards the questionnaire.

III. Ethical Consideration: Research proposal was approved from ethical committee. There was no harm for study subjects during application of the research. Confidentiality and privacy were assured.

IV- Field work: An awareness lecture was held in Gehan El Sadat Hall, completed the sheets for all participants. The assessment was done on all study sample (85) elderly participants; then

the educational program was implemented. The pre-operative data was collected in one day only. All subjects filled the questionnaires and given health education program. The researcher prepared the program, presentation, posters and flyers about oral and dental problems among elderly.

1. Content of the Educational Program:

A. Theoretical part: The participants received a program consisting of a single interactive 20-minutes session. Session pertaining to age changes, the etiology and prevention of dental diseases and oral hygiene procedures, and denture care procedures. The mode of delivery of oral health education was the help of posters, flyers, dental models, and PowerPoint presentation.

B. Practical part: It includes teaching elderly tooth brushing, tooth flossing and denture care. **The program phases:**

A. Assessment phase: the researcher illustrated the nature and aim of educational program, then filled out the questionnaire sheets before starting the program to assess awareness and knowledge of elderly.

B. Planning phase: The educational program was given to all the participants through group session. Aids were checked and arranged during this phase as session hall, audiovisual aids, and questionnaire forms. The researcher attended one day, about 20 mins for the session.

C. Implementation phase: The educational program was conducted in three months (from April 2022 to the end of July 2022). Total number of elderlies participated in the program was 85 (All in same session). Filling the pretest questionnaire and giving health education program in Gehan El Sadat Hall in El Wafaa and El Amal elderly home. Session was about overview of oral health (age changes, common problems, causes & risk factors, signs & symptoms), oral health care procedures (tooth brushing, flossing and denture care by explaining

procedures, watching video and redemonstrating).

D. Evaluation phase: After implementing the educational program for elderly patients, reassessment has done by post questionnaire which done immediately after implementing and completing the program to assess participant's knowledge and awareness.

Statistical analysis:

The following statistical tests were used, and all data were collected, calculated, tabulated, and statistically analyzed. A normality test (Kolmogorov-Smirnov) was done to check the normal distribution of the samples. Descriptive statistics were computed using mean \pm standard deviation (SD). Data were represented as numbers and percentages (%) for categorical variables, median, and mean for the variables measured using indicators. The Chi-square test was used to evaluate the association between qualitative data. A p-value less than 0.05 were considered statistically significant. All Statistical analyses were performed using the computer program SPSS software for windows version 26.0 (Statistical Package for Social Science, Armonk, NY: IBM Corp) at a significant level of less than 0.05 (p-value <0.05)

RESULTS

Responses to the items on the GOHAI questionnaire before and after the educational program were measured on a six-point Likert scale then, overall scales were assessed by their weighted mean. To measure the weighted mean for questions, the format of a typical six-level scale through three levels: high, medium, and low. These three levels were calculated from the following equation: The highest score for the item – the lowest score for the item / number of levels = $6-1/3 = 1.67$. Thus, the low-level ranges from (1 to less than 2.67), the medium level ranges from (2.67 to less than 4.33), and the high- level ranges from (4.33 to 6 degrees) high **Table (1)**

TABLE (1) Measure mean range and weighted mean to the Likert scale

Mean range	Weighted mean
1 to <2.67	Low
2.67to<4.33	Medium
4.33 to <=/6	High

The results in **Table (2)** can be concluded that before the program, the mean values for all responses under study ranged between 1.24 (Q9) to 1.40 (Q7) and the relative importance was 1.35 as overall. On the other side after study program the mean values for all responses under study ranged between 3.96 (Q1) to 4.45 (Q11) and relative importance was medium (4.19) according to Likert scale. The rate of change in the responses for the study was very high and also it was twice as high for all questions

compared to the responses before applying the program. The change percentage for all responses between before and after study was 147.62 which consider the least percentage found in (Q10) to 237 the highest percentage that found in (Q11).

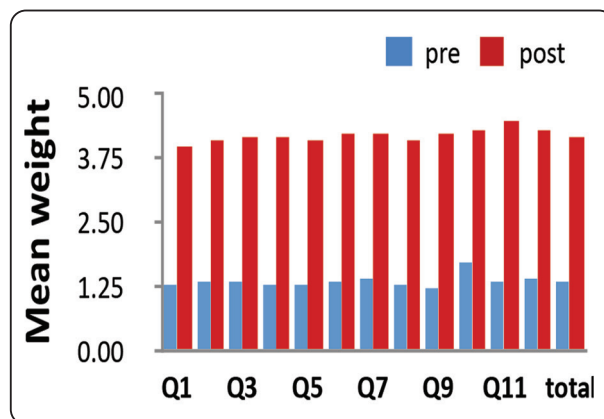


Fig. (1) Measure the weighted mean for a before and after study

TABLE (2), Measure the weighted mean for a before and after study

	Pre		Post		
	Mean range	Weighted mean	Mean range	Weighted mean	%Change
Q1	1.26	Low	3.96	Medium	214.95
Q2	1.33	Low	4.12	Medium	209.73
Q3	1.34	Low	4.16	Medium	210.53
Q4	1.28	Low	4.15	Medium	223.85
Q5	1.28	Low	4.11	Medium	220.18
Q6	1.32	Low	4.22	Medium	220.54
Q7	1.40	Low	4.25	Medium	203.36
Q8	1.28	Low	4.09	Medium	219.27
Q9	1.24	Low	4.24	Medium	242.86
Q10	1.73	Low	4.28	Medium	147.62
Q11	1.32	Low	4.45	High	237.50
Q12	1.41	Low	4.26	Medium	201.67
Total	1.35	Low	4.19	Medium	210.68



Figures (2,3): Showing participants during the session

DISCUSSION

The mouth reflects a person's general health and well-being throughout life, as it is considered the entrance to the body, oral diseases have many effects on most aspects of general health and health conditions or systemic diseases which had an impact on oral health as cardiovascular disease, stroke, respiratory infections, diabetes, and nutritional problems. Good oral health is an essential part of daily living, poor oral health is closely associated with economic status, social exclusion, and cultural differences **Basali et al.** ⁽⁴⁾.

As a reminder, our study aims to assess the oral health-related quality of life in El-Wafaa & El-Amal elderly home by using the geriatric oral health assessment index (GOHAI) before an educational session and after it by 3 months. Selection of the (GOHAI) was due to its role in assessing the physical function, pain or discomfort, and Psycho-social function, the GOHAI has been also found a significant predictor of self-rated dental appearance in an elderly population Venkatesan et al.⁽³⁾.

Although several studies have translated GOHAI into several languages and tested its validity and reliability, an Arabic version which has been used in our study was not available till 2007 Atieh ⁽²⁾, and there was not another tool to assess the OHRQoL.

El-Wafaa & El-Amal elderly home was selected because there were large number of old age and accepting participation in the educational program, the presence of a caregiver for each resident also was selected due to the facilities to introduce the educational program, was agreed with **Ryu et al.**⁽⁵⁾ who produced a program for the oral hygiene if the elderly inpatients in a certain elderly home.

Regarding the usage of oral health educational lectures through power point presentation because it is very effective in communication and an easy way to provide data, our study is similar to **Santoso et al.** ⁽⁶⁾ and **Ferraresso et al.** ⁽⁷⁾.

Additionally, regarding the usage of video in the oral health educational session as it considers an effective way of providing information and also in providing good interaction between participants, our study is similar to **Basali et al.** ⁽⁴⁾.

As regards the tooth brushing method which used in the lecture was similar to **Bok and Lee**⁽⁸⁾, the modified bass method because it considers the easiest and most comfortable tooth brushing technique for the elderly and the roll method in cases with gingivitis . Additionally, using the poster, as a health education method was beneficial as it is easy to access and can be seen repeatedly **Kasuma et al.** ⁽⁹⁾.

Regarding gender, the results of our study showed that most of the participants were males because males need more care than women who may have self-care till very old age, representing (51.8%) while females were 41 representing (48.2%).

Regarding the age it ranged between 65 years and 87 years; this including 25 (29.41%) subjects aged 65-69 years, 24 (28.24%) aged 70 to 75 years, and 36 (42.35%) aged 76 years or older this was in agreement with **Basali et al.**⁽⁴⁾ and **Denis et al.**⁽¹⁰⁾ while inconsistent with **Moussa et al.**⁽¹¹⁾.

Regarding the location of our study, was in a certain elderly home and the participants were living there permanently that selection was helpful for better observing and the presence of caregivers help in encouraging the participants to follow the given instructions similar to **Venkatesan et al.**⁽³⁾.

Regarding the duration of the educational program, our study took three months because that duration shows if there is a change in their knowledge and motivation that was in agreement with **Venkatesan et al.**⁽³⁾ as the duration of the study was within months, while our study disagrees with **Basali et al.**⁽⁴⁾ who conducted a study which took a year between the first and the second visit.

Regarding the follow-up and the need for a second visit, our study agrees with **Venkatesan et al.**⁽³⁾ who said their study needed a second visit. The second visit considers a better step to examine the success of the first visit and to confirm that the participants are following the instructions of the first visit.

While our study disagrees with **Moussa et al.**⁽¹¹⁾ who mentioned that the single visit program save time, money and materials. The results of our study showed that older geriatric subjects aged 75 years or older perceived physical problems associated with dentition more than psychological problems because most of them have physical impairment and bone problems and do not move easily.

Subjects aged more than 75 years showed higher percentages than those in the other age groups experiencing food limitations and having trouble biting firm foods may have been due to differences in the percentages with those who have dentures. Older age has been associated with a higher prevalence of edentulousness, which may relate to the higher percentages of this group having problems with eating and biting as **Venkatesan et al.**⁽³⁾.

Although age is associated with an increase in problems with dentition, the percentage of subjects that never worried about problems associated with teeth or dentures was higher in those aged 75 and above because most of them had a denture for a long time and they are adapted to it, while lesser with age 70 to 75 as **Sheehan et al.**⁽¹²⁾ because they soon lose their teeth and still not adapted to the new condition. Considering the limitations of food, our study recorded an observed progress after the educational session and a remarkable correlation between nutrition, the oral status of the elderly, and oral health educational program because a remarked decline in dental, gingival, and denture problems had been observed that was similar to **Zakaria et al.**⁽¹³⁾.

Additionally, trouble biting and chewing different food as meat or apples also showed differences in before and after results as the participants followed the given instructions so better gingival and periodontal status has been gained. Regarding the difficulties in swallowing, according to our study, the after-session results were different and showed proper progress as **Lee et al.**⁽¹⁴⁾ because the participants knowledge has been raised so they took care of their oral hygiene so less caries, gingivitis or ulcers had been detected so better swallowing had been gained.

Additionally, regarding the difficulty in speaking due to teeth or denture problems after the educational session it resulted that about 63 (74.1%) never experienced speaking problems after the visit, about 20 (23.5%) subjects rarely experienced problems

speaking, while 2 (2.4%) experienced sometimes speaking problems, this progress was in agreement with **Kangutkar et al.**⁽¹⁵⁾ as the participants showed more self-confidence due to the raise in their oral health status after our educational program .

Regarding comfortability during eating after the educational visit, it had been raised due to fewer complaints from dental or gingival problems so 4 participants (4.7%) rarely experienced eating anything without feeling discomfort, and most of the participants resulted by frequently able to eat without discomfort (51.8%) and most frequently (29.4%), that was in agreement with study in USA **Rosa et al.**⁽¹⁶⁾.

As regards times that have limitations in contact with other people because of the condition of their teeth or dentures, the results after the educational visit were improved because regular oral and denture care provides self-confidence and also raises the physiological status of the individual, similar to **Venkatesan et al.**⁽³⁾.

Regarding the times the subject was worried or concerned about problems with his teeth, gums or denture, there was a difference between the before and after results because the raise in oral hygiene decreases that type or worry, and as said before oral and denture care provide the self-confidence that was in agreement with **Hassan et al.**⁽¹⁷⁾.

There is a significant difference in our study between before and after assessment results in the remaining questions. Regarding the times that the subject was pleased or happy with the looks of his teeth and gums or denture, improvement in their oral health feeling nervous or self-conscious due to dental or denture problems after the educational visit the results, feeling of comfortability during eating In front of people, as well as the difference in before and after results in sensitivity of teeth or gums to hot, cold or sweet foods, this difference was not in agreement with **Venkatesan et al.**⁽³⁾ as they did not show any difference before and after the program in those conditions.

Our study showed a significant difference with a p-value less than .05 and did not use a control group, similar to **Riggs et al.**⁽¹⁸⁾ the results revealed a significant difference in pre–post scores in the treatment group ($p=.02222$), **Abd Allah et al.**⁽¹⁹⁾ was similar to our study with a significant difference in the results.

Finally, health education programs play an important role in raising oral health knowledge among the geriatric population, the results of our study showed that more than three-quarters of the studied elderly who had unhealthy oral states had poor reported practice about general oral health care.

A statistically significant difference was found between the studied elderly's total score of oral health care and oral health status after the educational program. This may be attributed to that good or fair oral health care can achieve a healthy oral state.

CONCLUSION

The program was effective because there was an overall change in the participant's oral health after the program and their negative thoughts had been changed to positive ones.

Recommendations

Improvement of the dental checkup for elderly in all health care facilities. Further health educational programs in the dental private clinics about oral health to raise oral health related quality of life of the elderly people. Adding oral health course in educational curriculum of nursing institutes and faculties to increase awareness of oral health among the nursing staff which will reflect on society.

Limitations of the study

The study was limited due to small sample size which might affect the results if any excuse happens to any participant. Additionally, more follow ups are needed to avoid such limitation.

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