

## The Effects of Nutrition Education on Food Contamination:- Knowledge, Attitude and Practices of Students at Basic Education School- Omdrman Province-Sudan

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**Abstract:** A high level of protection of individual's nutrition & health is one of the fundamental objectives of the prevention and control policies that can be done through nutrition education. The objective of this study to investigate the impact of nutrition education towards food contamination knowledge, attitude and practice among the pupils studying in basic education.

**Method and Material:** One hundred pupils were chosen randomly from two basic education level (Boy/ Girl)( grade 7). A new program about food contamination was set. Eight topics were developed. Regarding statistical analysis, Pre-test and Pro-test were set to examine the knowledge, attitude and practice and T-test to measure the achievement of the program was done.

**Results:** the results showed that the basic education syllabi missed topics on food contamination in all levels from first year-seven year. There was significant differences with regard to food contamination knowledge, attitude and practice between the performance of the students before and after the nutrition education sessions. In prescribed tests for both boys and girls correlation values were significant.. pre Vs post test for girls (2.9+1.8 Vs 7.6+2.5), for boys 3.1+1.9 Vs 7.4+2.7)<0.0).

**Conclusion:** The nutrition education on food contamination certainly affects the knowledge, attitude and practices of the pupils at basic education schools and their family positively. The results of pre and post test indicated that the perception of pupils towards knowledge, attitude and better practice on food contamination increased after the provision of the nutrition education sessions.

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### I. Introduction

Knowledge survey, attitude and practices are essential elements to prevent and control the food contamination and diseases in developing countries. These elements have a great concern by government (Sudan) and different community sectors (MOE,2006).

Food contamination refers to the presence of harmful contaminants as chemicals and microorganisms that cause illness for consumers (Wikipedia, org/wiki/food-contaminate).

Poor knowledge about food hygiene, safety and contamination play an important role in transmission and spreading of food-borne diseases in many parts of the world particularly in developing countries. In Sudan food contamination problems may exist in all regions and at every stage of economic development. For this reason food contamination program seems a necessity and should be widely introduced for all ages, at all levels and in both formal and informal education.

### Health Education

Health education is a profession of educating people about health.( McKenzie.et al. 2009) Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health.( Donatelle.2009). Health education can be defined as the principle by which individuals and groups of people, learn to behave in a manner conducive to the promotion, maintenance, or restoration of health. However, as there are multiple definitions of health, there are also multiple definitions of health education. The Joint Committee on Health Education and Promotion Terminology of 2001 defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions." (Joint Committee 2001). The World Health Organization defined Health Education as "comprisingof] consciously constructed opportunities for learning involving some form of communication

designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health.(W.H.O.1998).

#### **Role of health education teacher in basic school level**

By the mid 1970s it was clear that reducing illness, death, and rising health care costs could best be achieved through a focus on health promotion and disease prevention. At the heart of the new approach was the role of a health educator (Cottrell.etal.2009). A health educator is "a professionally prepared individual who serves in a variety of roles and is specifically trained to use appropriate educational strategies and methods to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities" (Joint Committee on Terminology, 2001, p. 100). In January 1978 the Role Delineation Project was put into place, in order to define the basic roles and responsibilities for the health educator. The result was a Framework for the Development of Competency-Based Curricula for Entry Level Health Educators (NCHEC, 1985). A second result was a revised version of A Competency-Based Framework for the Professional Development of Certified Health Education Specialists (NCHEC, 1996). These documents outlined the seven areas of responsibilities which are shown below.

**Responsibility I: Assessing Individual and Community Needs for Health Education Provides the foundation for program planning Determines what health problems might exist in any given groups Includes determination of community resources available to address the problem Community Empowerment encourages the population to take ownership of their health problems Includes careful data collection and analysis It is essential for healthy lifeto find out the vital health statistics in community.**

**Responsibility II: Plan Health Education Strategies, Interventions, and Programs Actions are based on the needs assessment done for the community Involves the development of goals and objectives which are specific and measurable Interventions are developed that will meet the goals and objectives According to Rule of Sufficiency, strategies are implemented which are sufficiently robust, effective enough, and have a reasonable chance of meeting stated objectives.**

**Responsibility III: Implement Health Education Strategies, Interventions, and Programs Implementation is based on a thorough understanding of the priority population Utilize a wide range of educational methods and techniques.**

**Responsibility IV: Conduct Evaluation and Research Related to Health Education Depending on the setting, utilize tests, surveys, observations, tracking epidemiological data, or other methods of data collection. Health Educators make use of research to improve their practices.**

**Responsibility V: Administer Health Education Strategies, Interventions, and Programs Administration is generally a function of the more experienced practitioner Involves facilitating cooperation among personnel, both within and between programs**

**Responsibility VI: Serve as a Health Education Resource Person Involves skills to access needed resources, and establish effective consultative relationships.**

**Role VII: Communicate and Advocate for Health and Health Education Translates scientific language into understandable information Address diverse audience in diverse settings Formulates and support rules, policies and legislation**

Education for health begins with people. It hopes to motivate them with whatever interests they may have in improving their living conditions. Its aim come is to develop in them a sense of responsibility for health conditions for themselves as individuals, as members of families, and as communities. In communicable disease control, health education commonly includes an appraisal of what is known by a population about a disease, an assessment of habits and attitudes of the people as they relate to spread and frequency of the disease, and the presentation of specific means to remedy observed deficiencies.( Washington State .2010)

Health education is also an effective tool that helps improve health in developing nations. It not only teaches prevention and basic health knowledge but also conditions ideas that re-shape everyday habits of people with unhealthy lifestyles in developing countries. This type of conditioning not only affects the immediate recipients of such education but also future generations will benefit from an improved and properly cultivated ideas about health that will eventually be ingrained with widely spread health education. Moreover, besides physical health prevention, health education can also provide more aid and help people deal healthier with situations of extreme stress, anxiety, depression or other emotional disturbances to lessen the impact of these sorts of mental and emotional constituents, which can consequently lead to detrimental physical effects.( Bundy D.1996);( Kann etal 2001)

In Sudan, the basic education level forms the widest base of the whole education activities and covers all the parts of the country(MOE, 2006). Therefore the increase of knowledge, attitude and practices concern food contamination can help in prevention and controlling the diseases that resulting from food contamination in the families and the community.

## II. Methods and Material

A descriptive institutional base, case study method used to conduct this reserch. From Omdurman province basic school hundred pupils were identified randomly. 50boys and 50girls in 7grade class at Abu kadok and Abu Anga basic school.

Review and evaluation of basic level of education syllabi is carry out in order to identify, analyze the existence of food contamination on basic education level. Identify the needs for new program on food contamination topics and activities to be develop.

Pre test was designed to evaluate pupil's knowledge, attitude and practice on 8 food contamination topics. The pre tests were done for all topics separately. The result showed that almost nearly all the pupils failed to score the passing level (50%).

The same 50girls (Abu Anga School) and 50boys (Abu Kadok School) in grade 7 from the same basic school were identified to be taught on 8 food contamination topics. The post tests were given for all topics separately. The result show that nearly all the pupils successes to score more than the passing level (50%).

Pre Vs Post-test was designed to evaluate the student's knowledge, attitude and practices on the same 8 food contamination topics.

## III. Results

**Table (1)** Scored Pre and Post test marks (X+S.D) on food contamination topics by girls in the grade 7 at basic school level.

Test	Number of student	Mean of scored Marks on Subjects (out of 8 topics)							
		Topic1	Topic2	Topic3	Topic4	Topic5	Topic6	Topic7	Topic8
Pre	50	2.2±1.5	2.9±1.5	2.7±1.5	2.6±1.9	4.1±2.8	2.6±2.1	3.8±2.0	3.7±1.4
Post	50	8.7±2.3	8.4±2.5	7.3±2.8	6.8±2.6	8.5±3.4	7.6±2.9	7.3±2.	6.9±1.7

N.B, All r values are significant (P.< 0.01)

**Table (2)** Scored Pre and Post test marks (X+S.D) on food contamination topics by boys in the grade 7 at basic school level

Test	Number of student	Mean of scored Marks on Subjects (out of 8 topics)							
		Topic1	Topic2	Topic3	Topic4	Topic5	Topic6	Topic7	Topic8
Pre	50	2.2±1.5	2.9±1.5	2.7±1.5	2.6±1.9	4.1±2.8	2.6±2.1	3.8±2.0	3.7±1.4
Post	50	8.7±2.3	8.4±2.5	7.3±2.8	6.8±2.6	8.5±3.4	7.6±2.9	7.3±2.	6.9±1.7

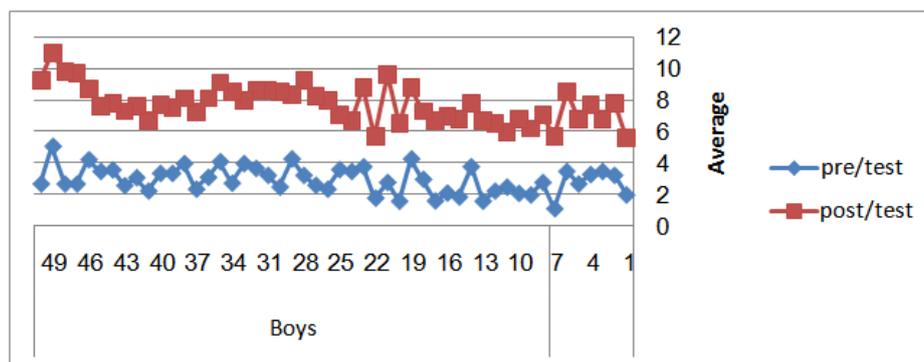
N.B, All r values are significant (P. < 0.01)

**Table (3)** Score marks (X+ S.D) of the pre Vs Post Test in 8 food contamination Topic

Group	Number of student	Pre-Test mark(out of 8topics)	Post-Test mark(out of 8topics)
Girl	50	2.9±1.8	7.6±2..5
Boy	50	3.1±1.9	7.±2.7

Figure No. 1- Correlation values ® of average Scored Mark (± SD) in pre and post tests for boys at Abu Kadok basic level education in eight food pollution and spoilage topics.

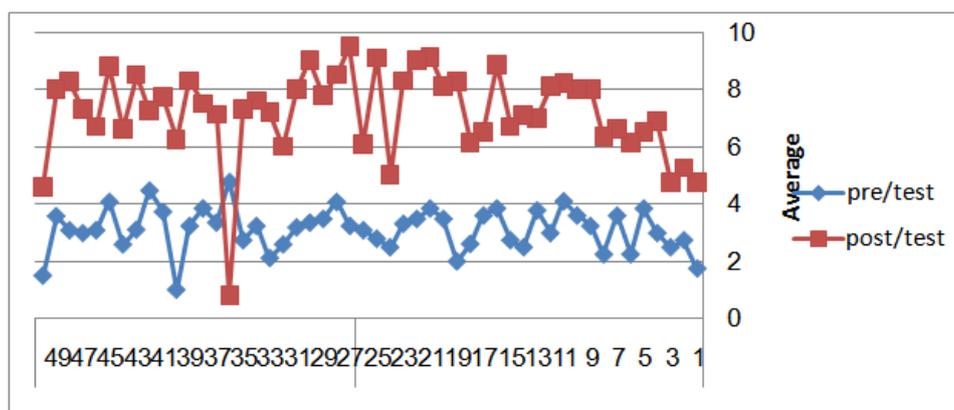
- 1-Contamination and food contaminants
- 2-Microbes as food contaminants
- 3-Chemical are food contaminants
- 4-Radio actives are food contaminants
- 5-Food spoilage
- 6-Food contamination and diseases
- 7-Effeects of food contamination on human health
- 8-Health education about food contamination



N.B. All ® values are significant (P.<0.01) Pre Vs Post –Test (Boys) P. <0.01)

**Figure No. 2** Correlation values ® of average Scored Mark (+ SD) in pre and post tests for girls at Abu Anga basic level education in eight food pollution and spoilage topics.

- 1-Contamination and food contaminants
- 2-Microbes as foodcontaminants
- 3-Chemical are food contaminants
- 4-Radio actives are food contaminants
- 5-Food spoilage
- 6-Food contamination and diseases
- 7-Effeccts of food contamination on human health
- 8-Health education about food contamination



Significance:-  
Pre Vs Post –Test (Girls) P. <0.01)

#### IV. Discussion

Results revealed that there was a significant difference between food contamination knowledge, attitude and practices among the pupils before and after the nutrition education sessions. All the pupils, boys and girls who participated in the food contamination education activities had shown deep interest by willing to participate on the study. All correlation values in pre and post tests in eight food contamination topics were significant. In line with present study, investigation on the effect of an educational booklet on the knowledge of elementary school students in Bushehr, in terms of food pollution, the extent and percentage of the students' knowledge considerably increased after the intervention (Ravanh, et al, 2006). The highest individual pre test values for boys ( $5.1 \pm 2.4$ ) and girls ( $4.8 \pm 3.3$ ) while the  $P. < 0.01$ ). (Table 1 & 2). In a prescribed tests for both boys and girls correlation values were significant ( $p < 0.0$ ), pre Vs post test for girls ( $2.9 \pm 1.8$  Vs  $7.6 \pm 2.5$ ), for boys  $3.1 \pm 1.9$  Vs  $7.4 \pm 2.7$ ). (Table 3), similar study for food safety and hygiene lesson revealed an overall improvement in children's knowledge both for the practical and theoretical classes (incident risk ratios [IRRs]: 1.2, 95% confidence interval (CI) 1.1–1.2,  $p < 0.001$  and 1.1, 95% CI 1.0–1.1,  $p < 0.001$ , post- versus pre-intervention). The same effect was observed for children's behavior, comparing post- versus pre-intervention for both groups (IRRs were 3.4, 95% CI 2.2–5.2,  $p < 0.001$  and 3.2 95% CI 1.9–5.5,  $p < 0.001$  (Losasso *et al.*, 2014). The ultimate goal of food safety and nutrition education is behavior change. However, existing textbooks of health & nutrition education partially cover information regarding food safety and nutrition and has a teacher-centered approach (Lee *et al.*, 2013))

## V. Conclusion

The nutrition education on food contamination certainly affects the knowledge, attitude and practices of the pupils at basic education school and their family positively. The results of pre and post test had indicated that the perception of pupils and acquiring knowledge, attitude and better practice on food contamination is increases after the nutrition education sessions.

## References

- [1]. Bundy D.; Guya H.L. (1996). "Schools for health, education and the school-age child". *Parasitology Today*. 12 (8): 1–16. doi:10.1016/0169-4758(96)30011-2.
- [2]. Cottrell, R. R., Girvan, J. T., & McKenzie, J. F. (2009). *Principles and Foundations of Health Promotion and Education*. New York: Benjamin Cummings.
- [3]. Donatelle, R. (2009). *Promoting Healthy Behavior Change. Health: The basics*. (pp. 4). 8th edition. San Francisco, CA: Pearson Education, Inc.
- [4]. Joint Committee on Terminology (2001). "Report of the 2000 Joint Committee on Health Education and Promotion Terminology". *American Journal of Health Education*. 32 (2): 89–103.
- [5]. Jones & Bartlett, (2007): *Nutrition education: Linking research, theory and practice*.
- [6]. Kann L.; Brener N.D.; Allensworth D.D. (2001). "Health education: Results from the School Health Policies and Programs Study 2000". *Journal of School Health*. 71 (7): 266–278. doi:10.1111/j.1746-
- [7]. Lee J.H., Jung S.Y., Park H.S. Kyonggi University; Suwon: 2013. Development of food safety and nutrition management program for adolescents by using the effective communication methods. [[Google Scholar](#)]
- [8]. Losasso C, Cappa V, Cibir V, Mantovani C, Costa N, Faccio E, Andrighetto I, Ricci A.,(2014)Food safety and hygiene lessons in the primary school: implications for risk-reduction behaviors.*Foodborne Pathog Dis.* (2014 Jan);11(1):68-74. doi: 10.1089/fpd.2013.1598. Epub 2013 Dec 3.PMID: 24299005
- [9]. McKenzie, J., Neiger, B., Thackeray, R. (2009). *Health education can also Boone seen as preventive medicine*(marcus 2012). *Health Education and Health Promotion. Planning, Implementing, & Evaluating Health Promotion Programs*. (pp. 3-4). 5th edition. San Francisco, CA: Pearson Education, Inc
- [10]. .Ministry of Education. (2006). *Educational Statistics. Educational planning under secretaries press*. Khartoum Sudan
- [11]. Ravan Pour M, Rasafiani H. TabrizIran 4-7(2006): The 9th Iranian nutrition congress; 2006. Effect of educational booklet on knowledge about food contamination in primary school aged children; p. 255. [[Google Scholar](#)]
- [12]. Wikipedia, org/wiki/food-contaminate.
- [13]. World Health Organization. (1998). *List of Basic Terms. Health Promotion Glossary*. (pp. 4). Retrieved May 1, 2009, frogmoyo [http://www.who.int/hpr/NPHj/ddoocs/hp\\_glossary\\_en.pdf](http://www.who.int/hpr/NPHj/ddoocs/hp_glossary_en.pdf)

## Profile

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