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Original Article

Effect of Health Awareness Program on Rural Women Self- reported Practices Regarding Domestic Health Hazards

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ABSTRACT

Background: Domestic health hazards are increasingly seen as a community health problem that could be prevented through increased awareness, proper practices and improvements in the home environment. **Aim of the study**: This study aimed to evaluate the effect of health awareness program on rural women self- reported practices regarding domestic health hazards. **Design:** A quasi-experimental research design using pre/ post-test. **Setting:** This study was conducted at the maternal and child health care center in Sakha village, Kafr Elsheik governorate **Subject:** A convenient sample of (193) rural women. **Tool:** A structured interview questionnaire divided into 4 parts. Part (1): Socio-demographic Characteristics, Part (2): Women housing conditions, Part ((3): Women's Knowledge assessment regarding domestic health hazards, part (4): Women's Self-Reported Practices regarding domestic hazards. **Results:** Reveals that the total good knowledge score level of the studied women regarding domestic health hazards increased from 10.9% in the preprogram to 73.1% in the post program, with a highly statistically significant difference ($p < 0.000$). There was a highly statistically significant improvement towards total women's domestic health hazards self-reported practices pre/post-program (25.9%, 88.1%, respectively(at ($P \leq 0.001$).**Conclusion and Recommendation**: It could be inferred that the level of women's knowledge and self- reported practices regarding domestic health hazards was significantly improved after the implementation of the awareness program with a highly statistically significant difference. The findings of current study indicate that expanding awareness program to include low-income communities for improving their knowledge and practice toward domestic hazards.

Keywords: Awareness program, domestic health hazards & rural women

Introduction:

Women are acknowledged for playing significant and complementary roles in sustaining the lives of their families all over the world. Additionally, they have built a reputable name for themselves as economic contributors in the food production, processing, and trading sectors. Health and quality of life are significantly impacted by one's housing situation. Housing is designed to offer both refuge and defense against social and physical threats. Due to the fact that most rural women spend most of their time indoors, usually at

home, housing has a substantial impact on human well-being. One of the most proven effects of housing on health is human exposure to domestic health hazards (**Morakinyo & Mokgobu, 2022)**.

Domestic health hazards are defined as a combination of physical, chemical, and biological contaminants from outdoor air, building and ornamental materials, burning appliances, and human activities. Exposure to indoor health hazards is widespread, numerous, and persistent. The ways of contact and spreading into the body are digestion, inhalation, mucosal, cutaneous, and transplacental **(Daniel et al., 2020).** Pollution of the domestic environment is a public health concern because of the length of time spent by the people in their homes (a mean of 16 hours on average each day) and the range of toxins there. Domestic Health hazards are frequently mistakenly thought to be less dangerous than outdoor air pollution **(Van et al., 2019).**

Domestic health hazards are those incidents that take place within a home or in the local area around it and are unrelated to traffic, automobiles, or sports. It can have a short- and long-term health effect on all family members, especially women, whose exposure significantly higher than men's. Because they frequently participate in cooking. People in developing countries, especially those from rural areas, are commonly exposed to prominent levels of household pollution for 3–7 hours daily while using biomass in their kitchen. Such biomass produces harmful smoke and creates domestic health hazards **(Aemro et al., 2021)**.

The records from the World Health Organization (WHO) show that domestic hazards are responsible for 2.7% of the world burden of disease and more than 1.5 million deaths each year. On a global scale, more than three billion people rely on solid fuels, including biomass and coal. Approximately four million people die prematurely from illnesses resulting from domestic pollution and ineffective cooking practices using polluting traditional stoves. Additionally, about a million people cook their food over open flames and stoves using coal, trash, wood, and animal dung. They were susceptible to dying prematurely from illnesses related to household health hazards. **(Padmanabha et al., 2021).**

Exposure to domestic health hazards can lead to a wide range of illness consequences, including acute and chronic diseases such as pneumonia, chronic obstructive pulmonary disease, cancer, ischemic heart disease, stroke, and cataract. Additionally, there is evidence to support the claim that exposure to home air pollution is connected to poor pregnancy outcomes, TB, malignancies of the upper digestive tract, cervical cancer, and other diseases **(Alex, et al, 2018**).

Rural women represent a large percentage of society and are relatively powerless to control their health and standard of living. Tragically, more women in rural areas are choosing not to spend money on their health due to competing demands on their little, uncertain, and seasonal income. Women most likely cannot afford health services during these economic downturns when there is no work and no money. Poverty frequently has

negative effects on one's health. Only individuals in good health can work more hours, earn more money, and support a stronger economy. As a result, there is a causal link between rural labour, health, and poverty because research on one topic often leads to research on another (Habib **et al,2021**).

The practices of rural women must be encouraged to reduce exposure to sources of domestic health hazards. These practices include a wide range of aspects of daily life, including food, hygiene products, cosmetics, air, textiles, household products, furniture, decoration, water, and toys. Also, the practices include recommendations such as ensuring adequate ventilation, getting rid of household dust, maintaining combustion appliances, limiting exposure to volatile organic compounds, monitoring materials containing asbestos, shielding children from lead paints, and preventing hot water contamination (**Pell et al., 2017**).

Health awareness programs are crucial for preventing domestic injuries, illnesses, fatalities, pain and financial distress. These actions can cause harm for rural women and their families (**Igbani et al., 2021).** The management of domestic safety and health is handled proactively in nursing education for safe domestic practices. Traditional methods are frequently reactive, which means that issues are only resolved after a woman is hurt or becomes ill, a new standard or law is released, or an external inspection identifies an issue that needs to be resolved. These safety practices understand that the best course of action is to identify dangers and eliminate them before they cause harm or sickness. In addition, following these recommendations for safe household practices has additional advantages for rural women's health and the health of their entire family, as well as lowering expenditures and lessening the burden on the community (**Kaakinen et al., 2018)**.

The community health nurse plays an essential role in women health education for preventing, reducing home health hazards and the accurate practice of first aid. Ensuring knowledge about safety actions for in-home health hazards has a significant influence on reducing the prevalence of home hazards. The prevention of hazards at home has become a critical aim for families' well-being and health promotion. In addition, the nurse alerts them about dangers of domestic health hazards on their families' health and on the environment (**Sultana et al., 2021)**.

Significance of the study:

Domestic health hazards are one of the major factors contributing to morbidity and mortality in communities. The most frequent domestic hazards are burns, falls, poisoning and injuries from sharp and pointed objects. Accidental poisoning, fire and falls led to 6.3%, 4.3% and 4.1% of all unintentional deaths respectively. Every year more than five individuals get injured due to domestic accidents. This leads to physical impairments, long-term deformities, psychological issues, untimely death, financial community burden and grief - for both the victim and the victim's entire family (**Rehman et al, 2020).** Egypt Demographic and Health Survey, reported that the most

commonly injuries are open wounds, fractures, burns (46%, 36%, 20%) respectively. Additionally, Accidents can occur in various places; nevertheless, 40% of mortalities and half of the accidents occur in and around the house (**Sabry et al., 2022**)Therefore, there's a need to highlight the problem of lack of rural women awareness regarding domestic health hazards so , the current study is conducted to examine the effect of health awareness program on rural women self- reported practices regarding domestic health hazards .

Aim of the study:

The study's main aim was to evaluate the effect of health awareness program on rural women self- reported practices regarding domestic health hazards.

Research hypotheses:

Implementation of the awareness program will positively change the rural women' knowledge level and their reported practices regarding domestic health hazards

Subject and Methods

Research Design:

Quasi-experimental one-group pre/pos-test design was used to achieve the study's aim. It was used to compare between study group pre/post awareness program. The dependent variable is measured once before and after program implementation. The dependent variable in this study is the rural women self- reported practices regarding domestic health hazards, and the independent variable is the health awareness program.

Setting: This study was conducted at the maternal and child health care center in Sakha village in Kafr El-Sheikh Governorate. This setting is selected because of its high flow rate of rural women and variety of services provided for large number of populations.

Sample:

A convenient sample of (193) rural women (sample size calculated by using "EPIInfo7" software program based on the total population of 1576 mothers who attended per three months and an expected frequency of 50% with margin error of 5% and confidence interval of 95%, this resulted in required sample size of 193 mothers.) accepted to accomplish the aim of this study and met the inclusion criteria that were rural women aged 18-40 years, rural women had never been received an awareness program about the domestic health hazards and its prevention and Rural women who agree to participate in the study and married.

Tools of Data Collection:

An interview schedule was designed by the researchers based on the recent and relevant literatures and consisted of the four parts as following:

Part 1: Women's Socio-demographic Characteristics as (age, educational level, occupation, Family income, type of family and number of children).

Part 2: Women housing conditions as reported by women regarding house type, general condition of house, kitchen size, location of kitchen, state of the kitchen, lighting of kitchen,

ventilation type, type of food containers, food storage containers and number of house rooms

Part 3: **Women's Knowledge assessment** regarding domestic health hazards**.** It was used Pre/post awareness program after revising the relevant literature **(Alex, et al, 2018) (Osinuga, et al, 2021), (Samy, etal., 2022).**

The questionnaire included 41 multiple choice questions including the following items (definition of domestic hazards, types of domestic health hazards (physical hazards as noise, extreme heat, extreme cold, fire, electromagnetic & microwaves radiation, slippery floor and electricity), (chemical hazard as gases leak, vapors, dust, lead present in domestic utensils and chemical substances), (biological hazards as indoor air pollution, bacteria, viruses and infections) ,(mechanical hazards as repetitive motions, prolonged standing , carrying heavy materials and sudden movements)(Psychological hazards as violence ,verbal insult, multiple role demand). Types of domestic accidents such as (fall, cut, injury, burn, electrical chock & poisoning), domestic electrical appliances faults as (A power surge , A fault in electric boilers , Problems with distribution cables , Loss of insulation , Short circuit Network electrical fault) and the main harm from domestic health hazards (Bronchial asthma, allergic rhinitis pneumonia ,eye sensitivity, infections , skin diseases cancer, hearing problems Varicose veins Backache , Fractures, torn ligaments ,Carpel tunnel syndrome.

Scoring system for knowledge:

Related to studied women ' knowledge assessment pre & post program Each question answer was corrected by researchers against a model answer as A score of (2) was given to the correct and complete answer; a score of (1) for correct but incomplete answer; and a score of (0) for the wrong or when the woman answered, "she does not know". The total knowledge scores were computed by summing up the number of correct answers for all. The total knowledge score was ranged from 0 to 82 categorized to the following three levels: - Knowledge level > 70% was considered good knowledge - From 50% to 70% was considered fair knowledge -< 50 % considered poor knowledge.

Part 4: Women's Self-Reported Practices regarding domestic hazards (Hamed &Mohammed (2020) & (Zedain et al., 2022) & (Kandil et al ,2021) Pre/ post Program include practices regarding avoidance of exposure to domestic hazards (29 items), First aid practices toward domestic accidents (26 items), practices regarding safety measures in domestic environment (12 items).

Scoring system for reported practices:

For each question, every correct answer had been scored as 1 point and 0 score for (do not know or do not do anything). A total score of self-reported practices was computed to end with 61 for the self-reported practice's part. Total practices had been categorized as satisfactory (≥70%) and unsatisfactory self-reported practices (<70%).

Validity and reliability:

The content validity of the tools, its clarity, comprehensiveness, appropriateness, and relevance were reviewed by three experts of community health nursing professor from the Faculty of Nursing; Tanta University to test the content validity before using it in the study. Modifications were made in accordance with the panel's judgment to ensure that the content was appropriate, and the sentences were clear. The same experts revised the developed awareness program that covered all items related to domestic health hazards based on the current literature, and all suggested changes were implemented. The Cronbach's α test was used to assess the reliability of the questions relating to knowledge, which was 0.86, and the reliability of the questions relating to self-reported practices was 0.89**.**

Pilot study

A pilot study was conducted on nineteen women, representing 10% of the women. Data gained from those women were included in the current study. The purpose of the pilot study was to evaluate the instruments' clarity, to determine how long it would take to gather the data, and to assess the feasibility of the research procedure. No alterations were made.

Ethical and legal considerations

The research gained first approval from the ethical committee at the Kafr Elshiekh University. Then permission from the medical center's director had been obtained. The study's participants had the option to opt out at any time, and the information they provided was kept private and confidential so that no one else could access it without the participants' express permission. Participation in the study was voluntary.

Fieldwork:

After receiving official approval to conduct the study, the chosen subjects were informed of their purpose. The study was carried out in three months, from November 2022, until January 2023. The tool's filling process took an average of 35 minutes. Three days every week, the researchers went to the previously specified location. (Sunday, Monday and Tuesday) from 8.30 am to 12.00 pm.

Awareness program construction included the following phases:

The assessment phase, by using a pre-testing tool to assess women's socio demographic, housing condition, reported accidents, falls and slips, burns, health insurance, referral systems, knowledge of domestic health hazards, and women's self-reported practices have been completed by the rural women during the working hours in medical center. The researchers greeted the women, explained the purpose of the study, and made sure they would cooperate. Then verbal and written consent of women was obtained. The researchers stayed in the medical center to complete the questionnaires, which took an average time of 35 minutes.

Planning and implementation phase, the health awareness program was designed for rural women based on the needs assessment

- The general objective of the health awareness program was to provide rural woman with

knowledge and measures of safe domestic practices for prevention of domestic health hazards and to promote behaviors that encourage a healthy and safe housing conditions.

- Based on the pre-test questionnaire findings, the researcher designed the program's content, and the program had been carried out over the course of six sessions (one session for pre-test, four sessions for awareness program and one for post-test).

-Each session began with a brief explanation of the objectives while using a simple Arabic language. Women were divided into eight groups, and each group consisted of around 25 women.

- By the end of each session, the women were made aware of the schedule for the following session by the end of each one.

The program content was tailored to meet women' needs

- Theoretical content included (Meaning of domestic hazards , types of domestic hazards (fire, indoor air pollution, water & gas leak, domestic accidents such as (fall, cut, burn, electrical chock & poisoning), domestic appliances faults, noise, electromagnetic & microwaves radiation, harmful chemicals in home and lead) and safety measures for each indoor hazard including prevention of indoor fire, proper sanitation & ventilation, continuous cleaning of floor & proper furniture arrangement, following standard precautions with electrical appliances & microwaves radiation

- The practical part includes (Avoidance of exposure to all types of domestic health hazards, first aid for (burns poisoning bleeding, fractures, skin chemical irritation) and safety measures for food preparation.

- Methods used throughout the sessions were discussions, poster, role play and a CD with a quick documentary video on indoor safety measures.

During evaluation phase, each woman in the study was evaluated for knowledge and self-reported practices immediately after implementing the developed health awareness program by using the same pre-test format.

Data Analysis

Statistical Package for the Social Sciences (SPSS) program, version 26. Means and standard deviations were used to express numerical data**.** Frequencies and percentages were used to express quantitative data. Fisher's exact test and the chi-square test were used to compare the results of the pretest and posttest.

Results:

Table (1): Reveals that 46.1% of women's ages ranged from 18 to 25 years old with mean age 26.2 ±4.3. Regarding the number of family members, it showed that 64.8% had three members. According to women's education, it was found that 66.3 % of the women had secondary education, and 18.8% of them had university education. Regarding women's occupations, the table depicted that 45.1% of them were farmers or manual workers. In relation to family income, the table showed that 47.2 % of them did not have

enough family income. In addition to that, 54.9% of the women lived in extended families.

Table (2): Represents that 62.7% of the studied women had a permanent house. It was found that 48.7% and 44.6 % of them had a fair general condition of the house and an adequate number of windows, respectively. In addition, 45.1%, 69.4%, 59.1, and 49.7 of the studied women had large kitchens, and their kitchens were separate rooms, semi-closed, with bright lighting, respectively. 42.5% and 17.5% of the studied women used aluminum food cooking containers and plastic food storage containers, respectively and their house consisted of three rooms

Table (3): Clarifies that 6.2%, 9.8%, and 8.3% of the women had a good level of knowledge regarding domestic hazards meaning, types, and domestic accidents, respectively, preprogram, which improved to 67.4%, 80.8%, and 78.2% of them regarding the same items post program. Moreover, 9.8% and 19.7% of women had a good level of knowledge regarding electronic appliance faults and the main harm from domestic health hazards preprogram, which changed to 69.9% and 68.9% of women regarding the same items post program. There was a highly significant differences between women's knowledge regarding domestic health hazards pre and post program at ($p<0.001$).

Figure (1): Illustrates that the total good knowledge score level of the studied women regarding domestic health hazards increased from 10.9% in the preprogram to 73.1% in the post program, with a highly statistically significant difference ($p < 0.000$).

Table (4): Illustrates that 27.5% of women had satisfactory practices regarding avoidance of exposure to chemical hazards pre-program, which improved to 92.7% of them post-program. In addition, 36.8% of women reported satisfactory first aid practices for poisoning pre-program, while 85% of them could exhibit this satisfactory level post-program. Moreover, 53.4% of women had satisfactory food preparation safety practices preprogram, which improved to 96.9% of them post program. There was statistically significant improvement towards all domestic health hazards self-reported practices among women pre/ post program at ($P \leq 0.001$).

Figure (2): Highlights a highly statistically significant improvement towards total women's domestic health hazards self-reported practices pre- and post-program (25.9%, 88.1%), respectively at ($P\leq 0.001$).

Table (5): illustrates that the statically association between level of education and total knowledge score post awareness program was significant at ($P\leq 0.001$)

Table (6): shows that the statically association between level of education and total reported practices score post awareness program was significant at ($P\leq 0.001$).

Table (7): Indicates a statistically significant difference between women's knowledge and practice total scores pre- and post-program at ($P=0.001$).

Table 1: Rural Women's Socio-demographic Characteristics (N=193).		
Items	N	%
Age		
18 - < 25	89	46.1
25 - < 32	73	37.8
32 - < 40	31	16.1
Mean age	26.2 ±4.3	
Number of family members		
three	125	64.8
four	48	24.9
More than four	20	10.4
Educational level		
Cannot read and write	21	10.9
Primary school	7	3.6
Preparatory	19	9.8
Secondary school / diploma	128	66.3
University degree and above	18	9.3
Occupation		
Housewife/not working	65	33.7
Farmers/manual workers	87	45.1
Employees	41	21.2
Family income		
Not enough	91	47.2
Barely enough	67	34.7
Enough	35	18.1
Type of family		
Nuclear	87	45.1
Extended	106	54.9

Table (2): Distribution of The Rural Women Regarding Their Housing Conditions (N=193)		
	N	%
House type		
Temporary	72	37.3
Permanent	121	62.7
General condition of house		
Poor	48	24.9
Fair	94	48.7
Good	51	26.4
Ventilation type		
Cross ventilation (adequate number of windows)	86	44.6
Through ventilation (Presence of fans)	75	38.9
Through door only	32	16.6
Kitchen size		
Small	44	22.8
Average	62	32.1
Large	87	45.1
Location of kitchen		
Separate building	8	4.1
Separate room within main house	134	69.4
Main living area in house	51	26.4
State of the kitchen		
Enclosed	79	40.9
Semi closed	114	59.1
Lighting of kitchen		
Bright	96	49.7
Average	78	40.4
Dark and enclosed	19	9.8
Food cooking containers		
Aluminum	82	42.5
Stainless steel	49	25.4
Tefal	20	10.4
Granite	23	11.9
Sag	19	9.8
Food storage containers		
Plastics	138	71.5
Metal cans	42	21.8
Glass jars	13	6.7
Number of house rooms		
Two rooms	4	2.1
Three rooms	134	69.4
Four rooms	51	26.4
More than four rooms	4	2.1

Table 3: Women Knowledge Regarding Domestic health hazards Pre / post awareness program (N=193)

	Pre program						Post program							
	Poor		Fair		Good		Poor		Fair		Good		Chi – Square	
	N	%	N	%	N	%	N	%	N	%	N	%	X^2	P
Meaning of Domestic health hazards	156	80.8	25	13.0	12	6.2	19	9.8	44	22.8	130	67.4	210.539	<0.001**
Types of domestic hazards	145	75.1	29	15.0	19	9.8	14	7.3	23	11.9	156	80.8	215.874	<0.001**
Type of domestic accidents	133	68.9	44	22.8	16	8.3	15	7.8	27	14.0	151	78.2	207.283	<0.001**
Domestic electronic appliances faults	137	71.0	37	19.2	19	9.8	27	14.0	31	16.1	135	69.9	161.686	<0.001**
The main harm from domestic health hazards	89	46.1	66	34.2	38	19.7	33	17.1	27	14.0	133	68.9	94.837	<0.001**

**Highly significant at p-value< 0.001.

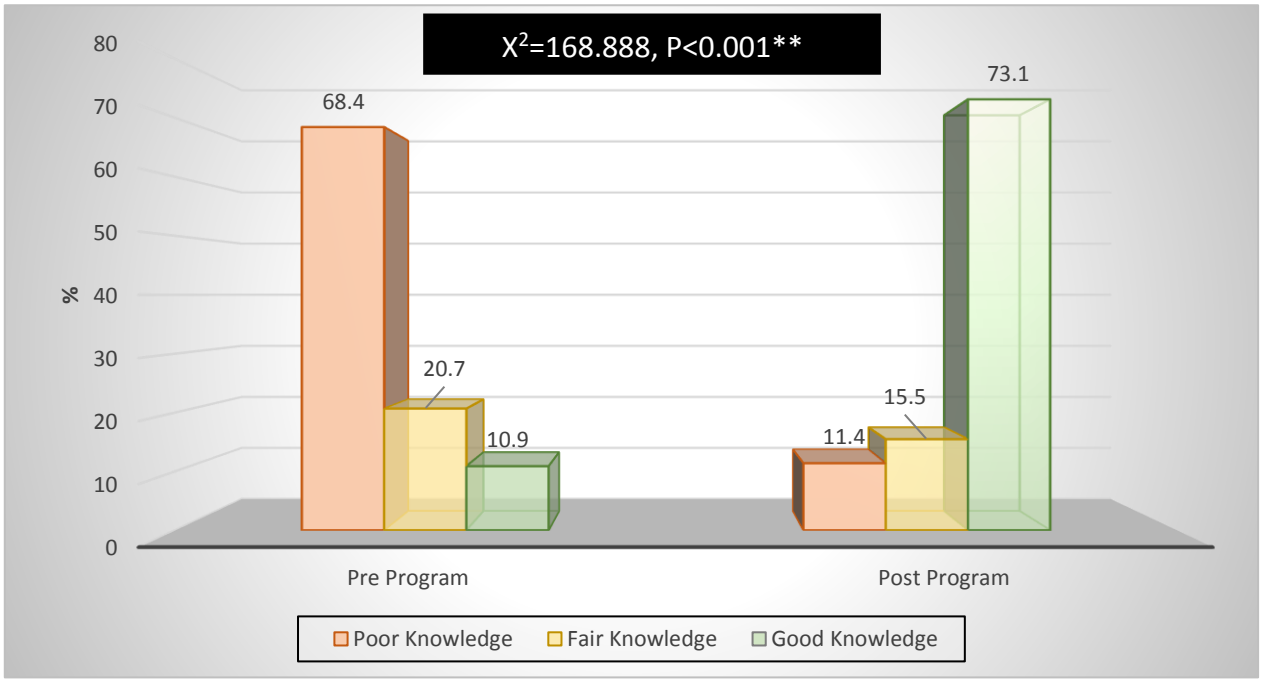

Figure. Total Women Knowledge Regarding Domestic health hazards Pre / post awareness program

Table (4): Domestic health hazards self- reported Practices Difference of Studied Sample Pre and Post Intervention (N= 193).

	Pre program				Post program					
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		Chi – Square	
	N	%	N	%	N	%	N	%	X^2	P
Self -reported practices regarding Types of domestic health hazards										
Avoidance of exposure to physical hazards	174	90.2	19	9.8	26	13.5	167	86.5	227.283	<0.001**
Avoidance of exposure to chemical hazards	140	72.5	53	27.5	14	7.3	179	92.7	171.521	<0.001**
Avoidance of exposure to biological hazards	155	80.3	38	19.7	9	4.7	184	95.3	225.993	<0.001**
Avoidance of exposure to mechanical hazards	180	93.3	13	6.7	7	3.6	186	96.4	310.445	<0.001**
Avoidance of exposure to psychological hazards	156	80.8	37	19.2	42	21.8	151	78.2	134.764	<0.001**
Avoidance of exposure to domestic accidents	166	86.0	27	14.0	20	10.4	173	89.6	221.182	<0.001**
Self - reported practices regarding first aid measures										
First aid for Falling/Fracture	174	90.2	19	9.8	14	7.3	179	92.7	265.463	<0.001**
First aid for Bleeding / cut or injury	131	67.9	62	32.1	18	9.3	175	90.7	139.575	<0.001**
First aid for Touching the eye with one of the chemicals	140	72.5	53	27.5	57	29.5	136	70.5	71.419	<0.001**
First aid for Poisoning	122	63.2	71	36.8	29	15.0	164	85.0	94.082	<0.001**
First aid for Burn	130	67.4	63	32.6	24	12.4	169	87.6	121.392	<0.001**
Self -reported practices regarding safety measures for domestic hazards										
Safety measures for domestic environment	107	55.4	86	44.6	37	19.2	156	80.8	54.275	<0.001**
Food preparation safety practices	90	46.6	103	53.4	6	3.1	187	96.9	97.831	<0.001**

**Highly significant at p-value< 0.001.

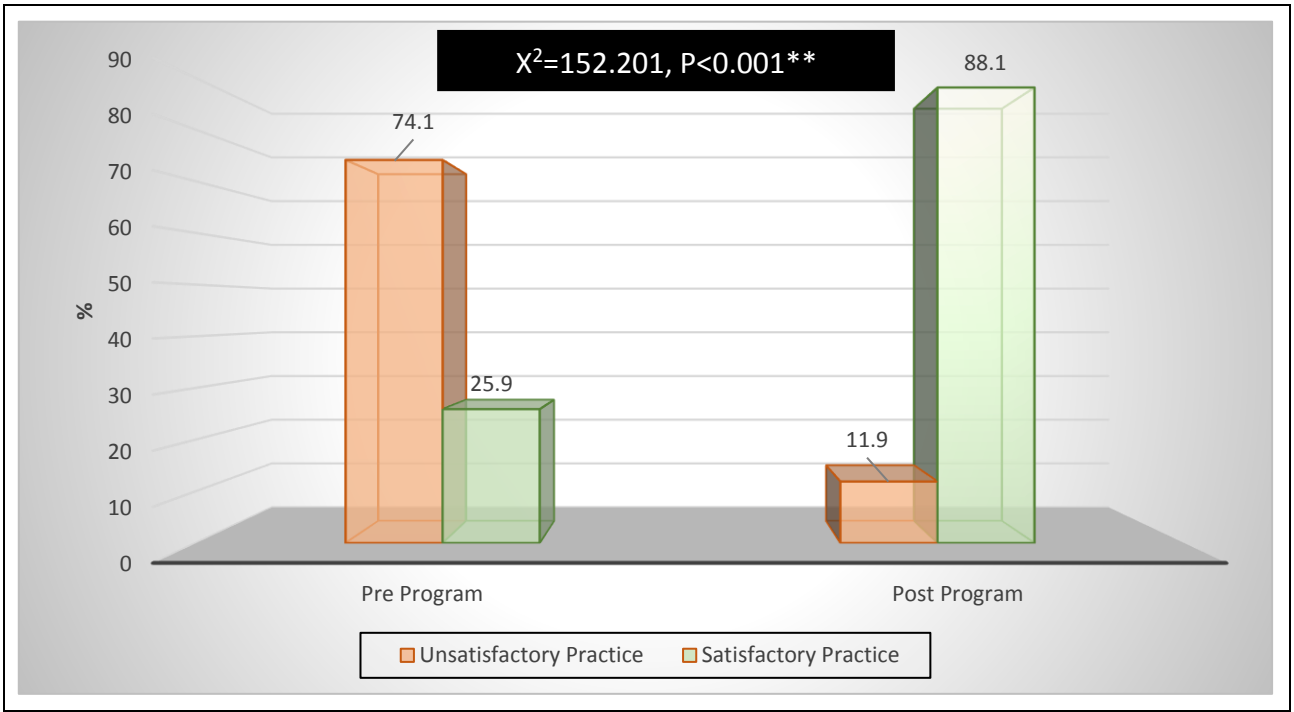

Figure. Domestic health hazards self- reported Practices Difference of Studied Sample Pre and Post Intervention

Table 5. Association between socio-demographic and knowledge level

	Poor		Fair Knowledge		Good		Chi – Square	
	N	%	N	%	N	%	X^2	P
Age								
18 - < 25	9	40.9	13	43.3	67	47.5		
25 - < 32	11	50.0	11	36.7	51	36.2		
32 - < 39	2	9.1	6	20.0	23	16.3	2.175	0.704
Marital status								
Married	16	72.7	22	73.3	87	61.7		
Widowed	4	18.2	5	16.7	39	27.7		
Divorced	2	9.1	3	10.0	15	10.6	2.457	0.652
Educational level								
Cannot read and write	18	81.8	3	10.0	0	0.0		
Primary school	2	9.1	3	10.0	2	1.4		
Preparatory	2	9.1	5	16.7	12	8.5		
Secondary school / diploma	0	0.0	19	63.3	109	77.3		
University degree and above	0	0.0	0	0.0	18	12.8	149.694	<0.001**
Occupation								
Housewife/not working	7	31.8	7	23.3	51	36.2		
Farmers/manual workers	9	40.9	17	56.7	61	43.3		
Employees	6	27.3	6	20.0	29	20.6	2.746	0.601
Family income								
Not enough	10	45.5	9	30.0	72	51.1		
Barely enough	9	40.9	12	40.0	46	32.6		
Enough	3	13.6	9	30.0	23	16.3	5.838	0.212
Type of family								
Nuclear	12	54.5	13	43.3	62	44.0		
Extended	10	45.5	17	56.7	79	56.0	0.903	0.637

**Highly significant at p-value< 0.001.

Table 6. Association between socio-demographic and practice level

	Unsatisfactory Practice (n=23)		Satisfactory Practice (n=170)		Chi – Square / Fisher's exact test	
	N	%	N	%	X^2	P
Age						
18 - < 25	10	43.5	79	46.5		
25 - < 32	8	34.8	65	38.2		
32 - < 39	5	21.7	26	15.3	0.627	0.731
Marital status						
Married	18	78.3	107	62.9		
Widowed	5	21.7	43	25.3		
Divorced	0	0.0	20	11.8	3.543	0.170
Educational level						
Cannot read and write	19	82.6	2	1.2		
Primary school	2	8.7	5	2.9		
Preparatory	2	8.7	17	10.0		
Secondary school / diploma	0	0.0	128	75.3		
University degree and above	0	0.0	18	10.6	145.104	<0.001**
Occupation						
Housewife/not working	4	17.4	61	35.9		
Farmers/manual workers	13	56.5	74	43.5		
Employees	6	26.1	35	20.6	3.104	0.212
Family income						
Enough	4	17.4	31	18.2		
Barely enough	9	39.1	58	34.1		
Not enough	10	43.5	81	47.6	0.229	0.892
Type of family						
Nuclear	12	52.2	75	44.1		
Extended	11	47.8	95	55.9	0.531	0.466

**Highly significant at p-value< 0.001.

Table7. Association between Knowledge and Practice levels

	Poor Knowledge (n=22)		Fair Knowledge (n=30)		Good Knowledge (n=141)		Fisher's exact test	
	N	%	N	%	N	%	X^2	P
Practice Level								
Unsatisfactory Practice	12	54.5	7	23.3	4	2.8		
Satisfactory Practice	20	45.5	23	76.7	137	97.2	52.885	<0.001**

**Highly significant at p-value< 0.001.

Discussion

Domestic health hazards are a worldwide public health issue, with morbidity and mortality as a result (**Farouk & Awadin (2021).** Most of rural women are engaged in home-based work characterized by long hours, poor returns, significant safety and health hazards, high dependence on intermediaries with limited skills and training opportunities to deal with hazards and injuries (**Shaaban, (2022).** The targeted population in the current study was rural women. This target was selected because they play an essential role in providing a safe environment to decrease or prevent domestic hazards. Additionally, domestic health hazards are more common in rural areas than in urban areas according **to El Seifi et al. (2018). So** that, the current study was conducted to evaluate the effect of health awareness program on rural women self- reported practices regarding domestic health hazards.

The results of the current study covered one hundred ninety-three rural women with mean age 26.2 ±4.3. Those group of women; approximately half of them live in extended family and work as farmers or manual workers without enough family income. This result agree with findings of the study done by **Samy et al., (2022)** on 255 household heads to study Effectiveness of Home-based Educational Intervention on Community Perception of Indoor Air Pollution that found about 51% of the respondents were less than 50 years old with an average age of 49 years, 29.4% of the respondents were farmers or manual workers and 52.2% of respondents had not enough family income. Also, Total family size was about five persons or more in 62.4% of the studied households. The present study results were related to rural values that reinforce and promote living in extended family.

As well as majority of rural women were married and had secondary education .This result agree with findings of the study done by **Osinuga et al., (2021)** on 256 women to study Understanding Rural Women's Domestic Work Experiences (DWE) in Ibadan, Nigeria: Development of a Measurement Tool Using Confirmatory Factor Analysis that found about More than half (62%) of the participants reported having started or completed secondary school education. This result may be related to traditional habits and nature of developing countries as early

marriage of rural woman and little interest in women education.

Majority of the studied women had a permanent house with fair general condition. Moreover; about half of the studied women had large kitchens as separate rooms, semi-closed with bright lighting. This result disagrees with findings of the study done by **Dida et al., (2022)** on 251 women to study Factors predisposing women and children to indoor air pollution in rural villages, Western Kenya that found most (64.5%) of the respondents lived in semi-permanent housing structures. More than half (49.8%) of the houses were in good condition. while (8.8%) had large sized kitchens. (13.5%) of the kitchens were in a separate room. From researchers' point of view, this may be related to low socioeconomic status as the majority of them reported having inadequate income and cultural differences.

Additionally, nearby half of rural women used aluminum food container in cooking. This result supported by **Mohamed et al., (2021)** on 372 participants to study Knowledge, Practices and Attitude regarding Food Safety among Rural Women in Ismailia Governorate that found 61.3% of study population use aluminum food containers. This result could be related to economic status, traditional beliefs in Egypt and lack of awareness toward food safety.

On the other hand, the results clarified prominent increase in rural women level of knowledge regarding domestic hazards meaning, types, and domestic accidents post program other than preprogram. Moreover, there was significant increase of women level of knowledge regarding electronic appliance faults and the main harm from domestic health hazards post program. Also, women show a highly significant increase in their total knowledge score in post program This result supported by **Sabry et al., (2022)** on 288 mothers to study Mothers' Knowledge and Practices Regarding First Aids Management of Domestic Accidents among Under-Five Children in El-Beheira Governorate that found highly increase in level of mothers' knowledge toward domestic hazards. Moreover, this study is in line with **Megahed et al. (2016),** who found that 64.8% of the mothers had unsatisfactory knowledge about home accidents. Also, this findings in the same line with **Farouk & Awadin ,(2021)** on 119 mothers to study Effect of Educational Interventions Regarding Home Accidents Among Children Underage of Six on Mothers in Rural Areas showed that rural mothers' Information about the six types of accidents was insufficient. However, these previous findings disagree with those of a study in Iran, where 75% were found to have good Knowledge (**Hatamabadi et al., 2013**). From researchers' point of view, these variations might be connected to the variations in the educational attainment of the study sample and the geographical location. Additionally, this result is concerning, and preventive action must be taken to prevent such Hazards by conducting educational programs. Also, it appears that the improvement in knowledge level of rural women's post program is based on the effectiveness of awareness program sessions. Moreover, this result goes with the research hypothesis.

Moreover, the results showed improvement in rural women satisfactory practices regarding avoidance of exposure to chemical hazards, first aid practices for poisoning and food preparation practices post program. Regarding women's domestic health hazards total self-reported practices, results of the present study Highlights a highly statistically significant improvement pre- and post-program at ($P \leq 0.001$). This result goes with the result of the study done by **Gholami et al, (2018)** who found that 67.2% of women had satisfactory level of practices toward health hazards. Also, this result supported by **Nour et al., 2018** conducted on 368 mothers to study knowledge, attitude, and practices of mothers towards home accidents among children, makkah, that found less than one third of them (29%) have good (proper) practices. This results consequent to increasing women awareness to hazards, correcting faulty manual practices, availability of safety and health training for prevention of domestic hazards. Also., This could be due to women desire to provide safe house environment to their family free from harm. This result goes with the research hypothesis.

Regarding correlation between demographic characteristics of rural women, their knowledge and self-reported practices, there was a highly statistically significant correlation between women education, knowledge, and self-reported practices. This result agrees with **Hamed, & Mohammed, (2020)** who conducted a study about Food safety knowledge, attitudes, and self-reported practices among food handlers in Sohag governorate, Egypt. The researchers found that higher education is an important indicator of good knowledge and satisfactory practices. This is consistent with (**Woh,et al.,2016**) on evaluation of basic knowledge on food safety and food handling practices amongst migrant food handlers in Peninsular Malaysia which found that education significantly influenced knowledge. From the researchers' point of view as awareness of rural women may affect their practices, ability to acquire general knowledge, furthermore awareness program enhances their practices and performance.

Fortunately, regarding correlation between women knowledge and self-reported practices, the current study showed highly significant correlation between total knowledge and total level of practices at ($P \leq 0.001$). This result is in the same line with **Hassan& Elsehry, (2022)** on 1000 rural women to study Knowledge, Self-Reported Practices, and Believes of Rural Women about Household Solid Waste Management at El Gharbia Governorate that showed a significant positive correlation between women's Knowledge, reported practice regarding households waste Additionally, This result is in the line with Baby and Mathew (2020) who conducted a study about Correlative study to assess the knowledge and practice of housewives regarding household waste management in selected rural community at Mangalore with a View to Provide an Information Pamphlet reported that there was moderate positive correlation between total knowledge score and total practice score. From the researchers' point of view, this result highlights the importance of

conducting awareness programs for raising rural women knowledge toward domestic hazards that will improve their practices, proper control, safety precautions for hazards to create a healthy and safe environment in their homes

Finally, rural women in Egypt are still in need of continuous effort and great attention to raise their awareness about domestic health hazards, in order to enhance their knowledge and subsequently, improve their practices toward these hazards.

Conclusion

Based on the previous results, it could be inferred that the level of women's knowledge and practices regarding domestic health hazards was significantly improved after the implementation of the awareness program with a highly statistically significant difference.

Recommendations:

The findings of current study indicate that expanding awareness programs to include low-income communities for improving their knowledge and practices toward domestic hazards. Moreover, further studies are needed to a larger sample for generalization

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