

Effect of Instructional Guidelines on Prevention of Dengue Fever among Rural Women

Taisser Hamido Abosree¹, Nehad Ahmed Ebrahim² & Hedya Fathy Mohy El-Deen Mansour³

¹. Assistant Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt.

². Assistant Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt.

³. Assistant Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt.

Abstract

Background: Millions of people worldwide develop dengue fever, an illness spread by mosquitoes each year. **Aim:** This study aimed to evaluate the effect of instructional guidelines on prevention of dengue fever among rural women. **Design:** A quasi- experimental design was utilized. **Setting:** The study was conducted at Sindenhur Rural Health Unit in Benha City Qalyubia Governorate, Egypt. **Sampling:** Simple random sample was used to carry out this study. Total sample size included 226 women. **Tools of data collection:** One tool was used in this study; An interviewing tool consisting of four sections representing socio-demographic characteristics, home environment, women` knowledge about dengue fever and women` reported practices regarding prevention of dengue fever. **Results:** 43.4% of the studied rural women` age 30-<40 years with mean was 34.30 ±6.90, 10% of studied women had good total knowledge pre guidelines instruction implementation which improved to 51.80% post-guideline instruction implementation; 12.40% of studied women had satisfactory total reported practices pre guideline instruction implementation which improved to 88.50% post-guideline instruction implementation. **Conclusion:** Instructional guidelines were succeeded in increasing knowledge, and improving practices of rural women regarding prevention of dengue fever. **Recommendations:** Developing preventive programs for women to improve the knowledge and practices regarding dengue fever prevention.

Keywords: Dengue Fever, Instructional Guidelines, Rural Women & Prevention

Introduction:

Dengue is a virus transmitted to humans through a bite from an infected mosquito. About half of the world's population is currently at risk from dengue, with 100–400 million cases recorded year. Dengue is primarily found in tropical and subtropical climates globally. Although the virus usually causes moderate illness or no symptoms, dengue infections can also occasionally result in more serious cases or even death. Controlling vectors is crucial for managing and preventing dengue (World Health Organization (WHO), 2023).

Apparently as a result of increased international travel, dengue fever is now endemic in a number of places worldwide. and increasing considerably in occurrence over the past several decades. Dengue fever is a major threat to public health due to its million cases and 20–25,000 fatalities every year, which are caused by outbreaks in several parts across the globe. Following infection with the Dengue Hemorrhagic Fever (DHF) subspecies, some people who had previously contracted one of the dengue virus's subspecies experience significant bleeding and capillary permeability (Schaefer et al., 2024) .

Humans develop the dengue virus when bitten by female infected mosquitoes, most commonly the *Aedes aegypti* mosquito. Although they can also serve as vectors, other *Aedes* species typically have a

greater role than *Aedes aegypti*. However, an increase in the local dengue transmission of the, *Aedes albopictus* mosquito, has been observed in Europe in 2023. The virus replicates in the midgut of the mosquito after feeding on an infected individual and then spreads to secondary tissues, such as the salivary glands. The Extrinsic Incubation Period (EIP) is the period of time that passes between a virus's ingestion and its actual transmission to a new host; it takes approximately 8 to 12 days if the outside temperature is between 25 and 28°C (WHO, 2023).

Classical dengue fever, Dengue Hemorrhagic Fever (DHF), Dengue Shock Syndrome (DSS), and mild-acute undifferentiated febrile illness can all be caused by a dengue fever infection. Acute febrile illness is characterized by a rash, headaches, leukopenia, and pain in joint, muscles, and bones. Hepatomegaly, high temperature, bleeding, and, circulatory collapse are the four main clinical symptoms of DHF. In some affected individuals, a substantial volume of plasma leakage may result in hypovolemic shock. The geographic distribution of both vectors and DENVs has led to the development of DHF and a worldwide outbreak of epidemic DF in recent decades, rendering certain metropolitan human populations in the tropics hyper-endemic (Khan et al., 2024).

There are differences in the dengue fever treatment plan depending on the patient's stage of disease.

Acetaminophen and enough oral fluids can usually be used to treat individuals without warning signs. Furthermore, it's important to inform patients of the warning indicators and urge them to get help immediately if any of them appear. Hospitalization should be recommended for patients who have risk factors, severe dengue fever, or illness symptoms. Intravenous crystalloids can be initiated for individuals exhibiting warning signals; the fluid rate can be modified dependent on the patient's response. Colloids may be necessary for patients who are in shock and not responding to early crystalloid boluses. When a patient is bleeding severely a blood transfusion may be necessary (Schaefer et al., 2024). Instructional guidelines are one of the best resources for enhancing clinical practice and public health. The goal is to develop interventions that are supported by strong evidence, avoid of irrelevant risks, make optimal use of available resources, and ultimately, promote high-quality healthcare and services. The guidelines aim to stop these illnesses from progressing to more severe forms and the potentially deadly events. Health professionals that assist in treating patients who may have dengue fever, such as nurses, medical and nursing students, general, individual, and specialty doctors, are the target audience for these guidelines. They are also meant for the executive teams of national programs that prevent and control arboviral disease as well as health unit managers, who are in charge of making the process of putting these guidelines into practice easier (Pan American Health Organization & World Health Organization, 2022).

Prevention and control measures are critical to reduce the spread of disease. Some principals of prevention for dengue are mosquito control, person protection by wearing long sleeved clothes, using mosquito repellent and sleeping under mosquito net, education and awareness campaigns to help people understand of prevention for dengue, surveillance system to detect outbreak of disease, case management and vector control (Janarthan et al., 2023)

It is imperative that primary care providers utilize mass media, such as visual aids, news coverage, online platforms and social media, to educate rural residents about DF symptoms and available preventive options. Accordingly, primary care providers ought to routinely educate the rural community about the DF through health camps or person-to-person outreach grounded in health awareness initiatives (Verma et al., 2019). Most women who reside in rural areas were unaware of dengue fever. The education about dengue fever is highly beneficial to inspire the women's, conscious in preventing and spreading of this sickness (Anita & Jaikumar, 2019)

A multifaceted approach is required to control dengue fever, including adequate medical therapy as well as preventive measures. Community health Nurses (CHNs) involve inpatient treatment, education, and community outreach to fight against dengue fever. In order to avoid dengue disease, CHNs inform people and communities about methods of prevention including eliminating mosquito breeding grounds, applying insect repellent, and advocating for personal protective equipment. CHNs engage in outreach campaigns to increase public awareness about dengue fever, its symptoms, and preventive measures. CHNs teach people the value of keeping surroundings free of mosquitoes and involving in keeping an eye on probable cases of dengue fever and reporting them to the public. (Alotaibi et al., 2022).

Significance of the study

In Egypt, reports of dengue outbreaks occurred in 1799 in Alexandria and Cairo. 2594 human cases were reported in Cairo in 1937. Unexpectedly, two Italian travelers getting back from South Egypt in 2011 tested positive with DENV. There were at least 253 cases of DENV in the Dairoute District of the Assiut Governorate in 2015. On the Red Sea coast of Egypt, in Hurghada, two cases of DENV were recorded in 2017 in vacationers returning to Moscow, Russia. A DENV outbreak in the Red Sea that year resulted in at least 680 cases. It was confirmed that *Aedes. aegypti* was produced in the Red Sea Governorate in the same year that there was a DENV outbreak with at least 680 patients. Over the past ten years, there have been outbreaks of DENV in Saudi Arabia, Yemen, Sudan, Djibouti, and the Red Sea region (Fang et al., 2022).

Germany saw 36 cases of dengue virus (DENV) infections in 2023 after travel in Egypt, up from zero to eight cases in 2017–2022. Nearly 50% of the patients had stayed in private residences along the Red Sea Coast, primarily in Hurghada. The number of cases developed more rapidly than the number of travelers. Towns have more mosquito problems than hotel grounds, which raises the danger of infection in residential areas. After returning from Egypt, medical professionals should examine dengue in cases of unexplained fever. German public health officials reported a sharp rise in dengue virus (DENV) infections among individuals exposed in Egypt in 2023, particularly between September 23 and January 23, 2024 (Frank, et al., 2023).

Several recent researches examined the resurgence of the *Aedes. aegypti* vector in Egypt, however they did not provide more evidence of its presence in Egypt. The Ministry of Health in Upper Egypt verified the occurrence of 101 dengue cases in Qena Governorate in October 2017. The city of Qusair (Red Sea

Governorate) reported the first occurrence of *Aedes aegypti* and the resurgence of the dengue outbreak, with over 680 patients (Rady et al. 2024).

Aim of study:

The aim of study was to evaluate the effect of instructional guidelines on prevention of dengue fever among rural women through:

- 1- Assessing women' knowledge and reported practices regarding prevention of dengue fever.
- 2- Assessing women' home environment for prevention of dengue fever.
- 3- Designing, implementing and evaluating the instruction guidelines on improving mothers' knowledge and practices about prevention of dengue fever.

Research hypothesis

Instructional guidelines will increase knowledge and improve practices of rural women regarding prevention of dengue fever

Subjects and Method:

Research design:

A quasi-experimental design was used in this study (one group pre/ and post-test).

Setting:

The study was carried out at Rural Health Unit in Sindenhur Village, Benha Center, Qalyubia Governorate, Egypt. This location along the water canal was selected because it provides vital health services to a large number of people and guarantees a high prevalence of women, making it the perfect place to conduct the study. The recruited women were also interviewed by the researchers in the Outpatient Clinics' waiting rooms while they were either waiting for their appointments or for a check-up in order to implement the instructional guidelines into practice.

Sample:

Simple random sample was utilized to carry out the study. Total sample size included 226 women were involved in the study from the previously chosen locations. The following formula was used to determine the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where "n" is the sample size

"N" is the total number of women attending to the previous mention setting in last six month at year 2023

"e" is coefficient factor = 0,05

N= 520 women. n= 226 women.

Tools of data collection:

One tool was used in this study as follows: Tool (I): women interview questionnaire: The researchers created it after examining relevant literature and professional opinions to ensure its content integrity. It

was translated into Arabic in order to prevent misunderstandings. It was divided into four parts: **Part (1): Women's demographic characteristics** It contained data which consisted of 6 items related to age, educational level, and marital status, monthly family income, and number of family members.

Part (2): Assess home environment for studied women through answering questions: Which consisted of 7 items related to home setting, ventilation, light, source of water, wastes disposal, garbage collection and kitchen facilities. A score was assigned zero if the home condition is poor, 1 if moderate and 2 if good.

Part (3): Women' knowledge regarding dengue fever; (pre/post) guidelines instruction phases that adapted from (Pareek, & Narsimulu, 2019; WHO, 2023): It consisted of 9 Multiple Choice Questions (MCQ) questions. It was used for all women in the study. Such as definition, causes, diseases transmission, risk factors, signs and symptoms, classification, diagnosis, treatment and prevention of dengue fever.

Scoring system: Response scores were allocated as follows: two grades for complete and correct answer; one grade for incomplete, and zero for don't know or incorrect. The scores ranged from 0 to 18. The total grades were added up, and the percentage was calculated for each woman based on statistical analysis, and knowledge level was regarded, those who achieved $\geq 75\%$ from the total score (≥ 13), was considered good. While considered average if it equaled $50 < 75\%$ from the total score ($9 < 13$) and considered poor if it was $< 9\%$ from the total score (< 10).

Part (3): Women' reported practices regarding to prevention of dengue fever (pre/post) guidelines instruction phases that adapted from (Centers for Disease Control and Prevention (CDC), 2023; WHO, 2023). After carefully reviewing the relevant literature, the researchers produced it which included 46 items such as **Using insect repellent** which include (5 items) such as use an appropriate insect repellent to protect the environment, avoid spraying insect repellent on skin beneath clothing, follow product label directions, reapply repellent as instructed, and apply sunscreen first and insect repellent second if you also use sunscreen. **Wearing long-sleeved shirts and pants** which include (5 items) such as wear long-sleeved pants and shirts, apply permethrin to shoes, pants, socks, and tents, or buy clothing that has been treated with permethrin; this will protect you for multiple washings; check product information to determine the duration of protection; and avoid applying permethrin directly to the skin. **Protection of infants and children** which include (7 items) such as use insect repellent

according to the directions; don't use it on children under two months old; cover your child's arms and legs with clothing; cover strollers and baby carriers with mosquito netting; don't utilize products that contain oil of lemon eucalyptus on children under three years old; don't apply insect repellent to a child's hands, eyes, mouth, wounds, or irritated skin, apply the insect repellent spray to the child's face after using it on your hands. **Control mosquitoes indoors** which include (5 items) use air conditioning if you can, and keep windows and doors closed, install or fix window and door screens, and empty or discard any items that collect water, such as flowerpot plates and vase once a week, apply an indoor pesticide or bug repellent and treat the locations where mosquitoes congregate. **Control mosquitoes outdoors** which include (5 items) as cover water storage containers tightly, use mesh with smaller openings than adult mosquitoes for containers without lids, treat big water containers that are not intended for drinking and cannot be covered or disposed of, fix cracks or gaps, and, tank, cover outlets or plumbing lines with mesh that has holes narrower than the size of adult mosquitoes when you have a septic. **Precautions when using insect repellents** which include (8 items) such as apply insect repellents only to exposed skin or clothing as directed by the manufacturer; avoid putting them on wounds, cuts, or irritated skin, use sufficient repellent to protect exposed skin or clothing; if biting insects do not react to a thin layer of repellent, add a little larger amount; wash your hands after using repellents to prevent accidental ingestion or exposure to your eyes; and, once you're back indoors, Skin treated with a repellent should be washed with soap and water., or shower, and follow the instructions on the product label for handling repellent-treated clothing. **Protection against mosquito bites when traveling** which include (5 items) such as keep mosquitoes out of your hotel, choose room with air conditioning or window and door screens, use a mosquito net if you can't stay somewhere with these features, or sleeping outside, sleep under net if covered rooms aren't available. Since mosquitoes can live indoors and bite both during the day and at night, buy a mosquito net online or at your neighborhood outdoor store before you travel overseas. **Use mosquito nets properly** which include (6 items) such as drape mosquito nets over the bed or cot to prevent mosquito bites; if air conditioning is not available, adults and kids should sleep beneath a mosquito net. Put a net underneath the cot mattress or pick one that is long enough to reach the floor, tighten the net to prevent young children from strangling themselves. If the net drops down into the sleeping area, attach the sides to other items, verify the net for any holes or rips that could allow mosquitoes to enter, and keep it away from open

flames, candles, and cigarettes since these can catch fire.

Scoring system:

The women reported practice questions were in MCQ format, with a total score of 46 for the 8 elements; done scored a 1, while the not done received a 0. If women reported their practices at a rate of greater than or equal 60% (≥ 27 points), their practices were adequate according to the method of total reported practices. Women whose reported practices fell below 60% (< 27 points) were considered inadequate practices.

Validity of the tool:

Five experts from the Faculty of Nursing, Benha University Community Health Nursing specialty evaluated the tools' content validity, clarity, comprehensiveness, appropriateness, and relevance. No changes were altered in accordance with the panel's ruling to guarantee the propriety and clarity of the sentences.

Reliability of the tool:

Test-retest reliability was used to evaluate the reliability of every gathering tool. Cronbach Alpha was used to test the study instrument's reliability. The rural women knowledge reliability was ($r = 0.47$), rural women reported practices reliability was ($r = 0.82$)

Pilot study:

A pilot study was carried out on 10% of the sample, or 26 rural women, to evaluate the viability and clarity of the data collection instruments. Since no modifications were performed, the pilot study sample was included in the entire sample.

Ethical considerations:

Written approval was taken from research ethical community at Faculty of Nursing, Benha University. Following an explanation of the study's goal, the subjects signed consent to participate. The subjects were briefed on the purpose, nature, and implications of the study prior to data collection. Participants were given the option to decline participation at any point during the trial. Additionally, they received guarantees that the data would be kept confidential and utilized to conduct research.

Administrative design:

Administrative permission was received through an issued letter from the Dean Faculty of Nursing, Benha University to Director of the previously selected setting to achieve this study.

Instructional guidelines construction:

Assessment, planning, implementation, and evaluation constituted the main methods utilized to conduct the study. The study was conducted from the beginning of July 2023 until the end of December 2023. The researchers attended the previous setting three days/week from 9:00 am to 12:00 pm, Data were collected from women during they are waiting in the waiting area of the Outpatient Clinics. The

researchers scheduled and prepared meetings with women to enable them to receive the instructional materials and content.

Assessment phase:

In the assessment phase, baseline data was collected by interviewing the women. During the roughly eight-week pretest phase, the researchers were on site three days a week from 9:00 am to 12:00 pm on Saturday, Tuesday, and Thursday. At the onset of the interview, the researchers welcomed each woman, explained the goals, schedule, and research activities, and received their written consent. The researchers evaluated women's knowledge and reported practices through interview. It required 15 to 30 minutes. The numbers of women were interviewed based on their attendance and commitment to be included in the study.

Planning phase:

The needs determined during the women's assessment phase and the pertinent literature were taken into consideration by the researchers when they created the instructional guidelines. Using simple Arabic, the researchers determined the quantity and substance of the sessions, as well as the various teaching techniques and media, based on the women's understanding level.

Preparatory phase:

Formal approval for data collection was gained when the research directors were informed of the investigation's goals. The study's rural women participants gave their consent. Books, essays, newspapers, and magazines were used to explore the literature on the various facets of the issues from the past and present, both locally and globally. Guidelines were prepared in the Arabic language to cover many parts of the study topic created to close knowledge and practice gaps among rural women after examining pertinent Arabic and English literature.

The instructional guidelines **aimed** to evaluate the effect of instructional guidelines on prevention of dengue fever among rural women. **Specific objectives:** At the end of instructional guidelines implementation the rural women should be able to A: -Explain the meaning of dengue fever -List the types, causes, and risk factors for dengue fever. - Enumerate the signs and symptoms of dengue fever - Recognize transmission methods of dengue fever. Explain classification of dengue fever, list diagnosis of dengue fever, apply treatment and prevention of dengue fever.

Practical skills:

Included the practical part such as use insect repellent, wear long-sleeved shirts and pants, how to protect infants and children, control of mosquitoes indoors, control mosquitoes outdoors, precautions when using insect repellents, the protection against

mosquito bites when traveling and use mosquito nets properly.

Phase II: Implementation phase: The first interview begins with the researcher introducing herself to strike up a conversation and discussing the study's objectives. The researcher conducted 15 to 30 minutes in-person interviews with the rural women. The researcher greeted and introduced herself to rural women before each interview. After that, the researcher informed them of the purpose of the study and got their agreement. Simple and understandable information on dengue fever was incorporated in the instructional guidelines. Additionally, it involved creating instructional resources including images, and PowerPoint presentations. Arabic booklet designed by the researchers; including instructional guidelines regarding dengue fever was introduced to women at the end of the sessions. Six sessions have been used to organize the subject contents (three sessions for theoretical content and three sessions for practices).

Contents of sessions

Session 1: Definition of dengue fever; types, causes, and risk factors for dengue fever.

Session 2: The signs and symptoms of dengue fever, transmission methods and classification of dengue fever,

Session 3: Diagnosis of dengue fever; treatment and prevention.

Session 4: Preventive practice such as use insect repellent, wear long-sleeved shirts and pants, and how to protect infants and children,

Session 5: The control of mosquitoes indoors, control mosquitoes outdoors, and precautions when using insect repellents,

Session 6: Included the protection against mosquito bites when traveling and use mosquito nets properly.

Phase III: Evaluation phase:

Using the same pretest data collection tool, the post-test was conducted right away to assess how successful instructional guidelines were at preventing dengue illness among rural women.

Statistical analysis:

The data were analyzed using version 20 of the SPSS statistical program. Both before and after the instructional guidelines, continuous data were collected and given as the standard deviation (SD) of the mean. Numbers and percentages were used to express categorical data. Chi square was used to ascertain the distribution of numbers and percentages, and the Paired (t) test was performed to compare mean scores among the same sample at different study phases. For statistical significance, a P value under 0.05 was required as highly significance $p \leq 0.001$, Significance $p < 0.005$, Not significant $p > 0.005$.

Results:**Table (1): Distribution of the studied women's regarding their demographic characteristics (n=226)**

Demographic Characteristics of Women's	Studied Mothers	
	No.	%
Age /years		
≤20 -<30	64	28.3
30-<40	98	43.4
40+	64	28.3
Mean± SD 34.30 ±6.90 years		
Women's' education		
Illiterate	15	6.6
Basic education	7	3.1
Secondary education	105	46.5
High education or more	99	43.8
Marital status		
Single	6	2.7
Married	189	83.6
Divorced	31	13.7
Monthly family income		
Enough and save	28	12.4
Enough	156	69.0
Not enough	42	18.6
Number of family members		
2	14	6.2
3	72	31.9
4	98	43.3
≥ 5	42	18.6

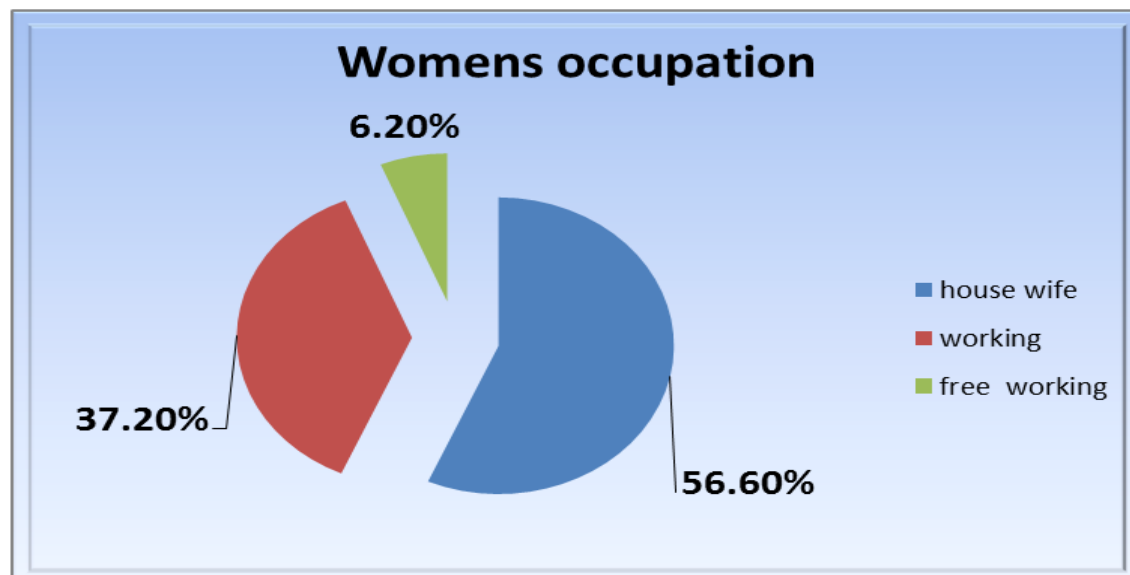
**Figure (1): Distribution of the studied women's regarding their occupation (n=226)**

Table (2): Distribution of the studied women's regarding their home environment (n=226)

Items	Home environment					
	Good		Average		Poor	
	No.	%	No.	%	No.	%
Home setting	135	59.7	91	40.3	0	0.0
Ventilation	58	25.7	168	74.3	0	0.0
Light sources	0	0.0	226	100.0	0	0.0
Water sources	226	100.0	0	0.0	0	0.0
Wastes disposal	121	93.8	14	6.2	0	0.0
Garbage collecting	37	16.4	189	83.6	0	0.0
Kitchen facilities	149	65.9	77	34.1	0	0.0

Table (3): Distribution of the studied women regarding their knowledge about dengue fever thorough guidelines instruction phases (n=226)

Knowledge items of dengue fever	Pre-guidelines instruction (n =226)						Post-guidelines instruction (n =226)						X ² FET	P val ue
	Complete &correct Answer		Incomple te answer		Didn't know Or incorrect answer		Complete & correct Answer		Incomple te answer		Didn't know Or incorrect answer			
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%		
Definition	13	5.8	141	62.3	72	31.9	201	88.9	15	6.7	10	4.4	169.88	0.000
Causes	9	3.9	91	40.3	126	55.8	172	76.2	43	19.0	11	4.8	94.82	0.000
Disease transmission	7	3.1	99	43.8	120	53.1	141	62.3	70	31.0	15	6.7	87.16	0.000
Risk factors	12	5.3	84	37.2	130	57.5	120	53.1	100	44.3	6	2.6	86.14	0.000
Signs and symptoms	13	5.8	63	27.9	150	66.3	160	70.7	50	22.2	16	7.1	114.14	0.000
Classification of dengue fever	10	4.4	50	22.2	166	73.4	141	62.4	77	34.1	8	3.5	117.64	0.000
Diagnosis of dengue fever	10	4.4	70	31.0	146	64.6	127	56.2	92	40.7	7	3.1	110.10	0.000
Treatment of dengue fever	4	1.8	42	18.6	180	79.6	134	59.3	80	35.4	12	5.3	89.22	0.000
Prevention of dengue fever	7	3.1	84	37.2	135	59.7	169	74.7	50	22.2	7	3.1	110.23	0.000

Table (4): Distribution of the studied women' reported practices regarding to prevention of dengue fever thorough guidelines instruction phases (n=226)

Reported practices regarding items of dengue fever	Pre- guidelines instruction (n=226)				Post- guidelines instruction (n=226)				X ² FEET	-value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No.	%	No.	%	No.	%	No.	%		
Using insect repellent	35	15.5	191	84.5	190	84.1	36	15.9	107.68	0.000
Wearing long-sleeved shirts and pants	52	23.0	174	77.0	185	81.9	41	18.1	91.75	0.000
Protection of infants and children	24	10.6	202	89.4	179	79.2	47	20.8	140.77	0.000
Control mosquitoes indoors	39	17.3	187	82.7	192	85.0	34	15.0	110.46	0.000
Control mosquitoes outdoors	32	14.2	194	85.8	178	78.8	48	21.2	116.12	0.000
Precautions when using insect repellents	38	16.8	188	83.2	181	80.1	45	19.9	99.55	0.000
Protection against mosquito bites when traveling	37	16.4	189	83.6	207	91.6	19	8.4	102.23	0.000
Using mosquito nets properly	49	21.7	177	78.3	184	81.4	42	18.6	89.22	0.000

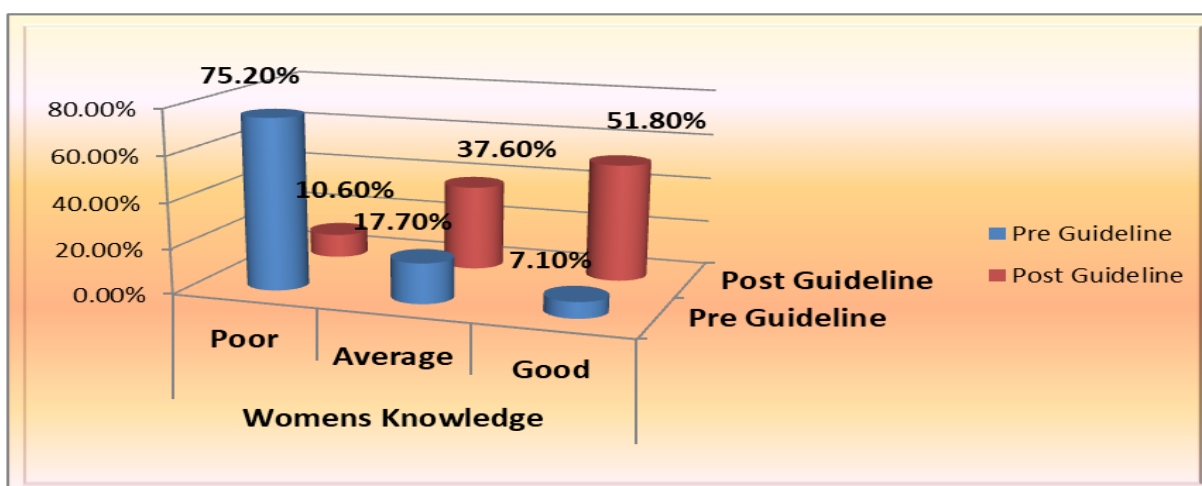


Figure (2): Distribution of total levels of women's knowledge regarding of dengue fever thorough guidelines instruction phases (n=226)

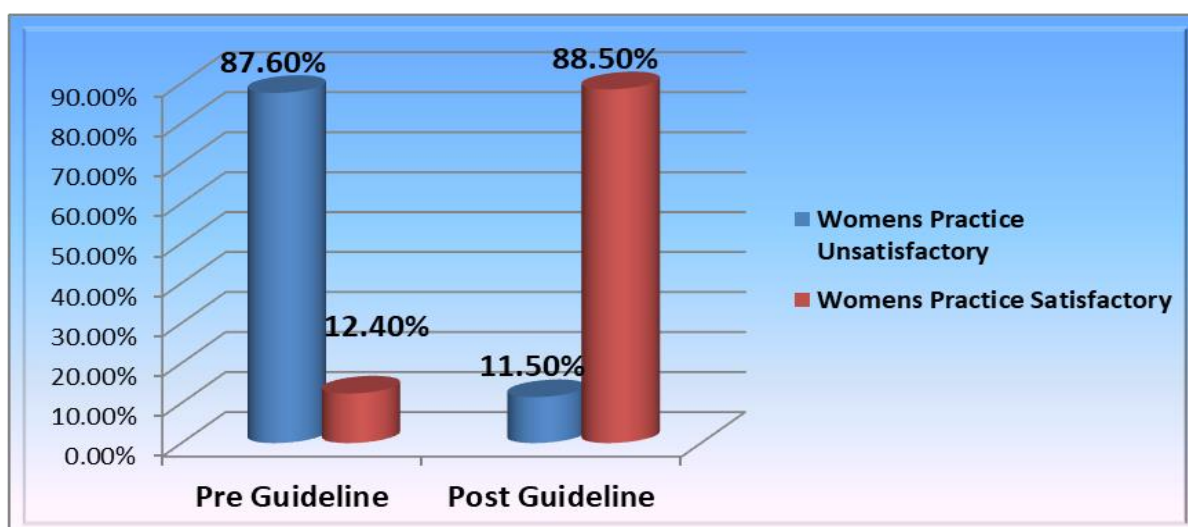


Figure (3): Distribution of total level of women's reported practices regarding prevention of dengue fever thorough guidelines instruction phases (n=226)

Table (5): Correlation between women's' total knowledge scores and total practices scores regarding prevention of dengue fever thorough guidelines instruction phases (n=226)

Women's total practices scores	Women's total knowledge scores			
	Pre guidelines instruction		Post guidelines instruction	
	R	p	r	p
Pre guidelines instruction	0.544	0.000	0.747	0.000
Post guidelines instruction	0.136	0.000	0.328	0.000

Table (1): Shows that; 43.4% of the studied rural women` age 30-<40 years with mean was 34.30 \pm 6.90, 46.5% of them had secondary education, and 69.0% of them had enough income. Also, the table shows that 43.3% of studied women had four family members.

Figure (1): Illustrates that; 56.60 % of studied women were housewives and only 6.20% of them had free working.

Table (2): Shows that 100% of rural women had good sources of water and average sources of light in their homes.

Table (3): Demonstrates that; there were highly statistically significant differences between all items of the studied women` knowledge regarding dengue fever pre and post guidelines instruction $p < 0.001$.

Table (4): Clarifies that, 16.4% of the studied women had adequate practices regarding protection against mosquito bites when traveling pre- guidelines instruction implementation and improved to 91.6% post- guidelines instruction implementation. Also, there was highly statistically significant difference in women` practices regarding prevention of dengue fever Post- guidelines instruction implementation.

Figure (2): Illustrates that; 7.10% of studied women had good total knowledge pre guideline instruction implementation which improved to 51.80% post-guideline instruction implementation, while 75.20% of them had poor total knowledge pre-guideline instruction implementation and reduced to 10.60% post-guideline instruction implementation.

Figure (3): Illustrates that; 12.40% of studied women had adequate total reported practices pre guideline instruction implementation which improved to 88.50% post-guideline instruction implementation.

Table (5): Reveals that there were highly positive statistically significant correlations between women` knowledge scores and their total practices scores regarding prevention of dengue fever at pre and post implementation of guidelines instruction.

Discussion:

Dengue is a virus that spreads by the bite of many different species of mosquito and impacted almost half of the world's population. In tropical and subtropical areas, it is more common. The virus can produce a mild to severe flu-like illness and, in rare circumstances, even death, but the majority of cases are asymptomatic. (Pawaria et al., 2019). Due to increasing the incidence of dengue fever infection, there is an urgent need for improving the community awareness and preventive measures. Hence, in this study, the researchers investigated the effect of instructional guidelines on the knowledge, and practices of women in relationship to dengue illness. Regarding the studied rural women ages, the findings of the current study indicated in which nearly one-half of the women were between the ages of thirty and forty, with a mean of 34.30 ± 6.90 . This result was in contrast to the findings of Ayed et al., (2024), who conducted the investigation titled "impact of educational guidelines on mothers' attitudes, knowledge, and behaviors related to preventing dengue fever complications in their children." (N: one hundred). The latter investigation demonstrated that Mothers aged eighteen to thirty made up the bulk of the sample, according to the research. The age category of respondents did not have any correlation

with their information of Dengue fever prevention (Harapan et al., 2018).

The current study demonstrated that less than half of the women under study had completed secondary education. This result disagreed with the one that of Sari et al., (2020) findings in their study "Mothers' Awareness, Perception, and Behavior in Preventing Dengue Hemorrhagic Fever in Endemic and Non-Endemic Areas of Pekanbaru City, Riau Province, Indonesia" (N= two hundred). The research demonstrated that the percentages of mothers were slightly more than half respectively had high school education, making up over half of participants in both endemic and non-endemic areas. Informants who were educated exhibited superior knowledge, appropriate attitudes, and optimal practices. Access to information (e.g., internet facilities, newspapers) may be made easier with education, which is an unintended effect of schooling that manifests itself in the ability to grasp educational content.

In the present study, it was showed that more than half of the mothers under investigation are housewives, with regard to their occupation. Abo Elsoud et al., (2023), concurred with this outcome in their study of the "Impact of Educational Guidelines on the Knowledge, Practice, and Anxiety of Expectant Mothers about Dengue Fever." "N: one hundred", which demonstrated that over half of the expectant women under study were not employed. From the researchers' point of view housewives, mothers are heavily involved in household chores that have a direct bearing on prevention techniques. They are responsible for gathering and storing water for household usage, caring of sick family members, and clearing out mosquito breeding grounds.

The present study's results indicated that, according to the environmental characteristics of the women under investigation, that nearly all participants had good water sources and wastes disposal system, more than one half had good home and kitchen facilities. However, all of them had average lighting, and majority of them had average garbage collecting and ventilation. The National Environmental Health Association (NEHA) (2018) asserts that environmental factors are pivotal in controlling mosquito-borne infections while administering their treatment. The conclusion of mosquito-friendly areas is a significant undertaking. Examinations and studies for the environment give a chance to intercede assuming that there are issues such as standing water, holders, or garbage that could serve as a living space for mosquito hatchlings. The likelihood of diseases transmitted by mosquitoes, including dengue fever can be reduced by increasing awareness of mosquito control among environmental and public health professionals.

The dwelling environment may serve as a habitat for mosquitoes especially in situations where there is a shortage of proper housing, clean drinking water, and sanitation. The sanitation facilities, the house's condition, and the way people behave in the house decide the state of the house. The residence's poor physical state, including high humidity likewise, low lighting support the rearing of the mosquitos. Also the availability of clean enough water for people to drink try not to have to gather water, would lessen the mosquito's places to breed. The good Household waste treatment facilities could cut the expendable site of mosquitoes (**Sukesi et al., 2021**).

The current study showed that only less than a tenth of the studied women had complete and correct answers regarding the virus that causes dengue fever, how it spreads, and the signs and symptoms it causes, treatment, and risk factors pre- guidelines instructions implementation. These findings conform to findings from studies carried out by **Rahman et al. 2023**, " A case study of slum dwellers' attitudes, knowledge, and behaviors around dengue fever in Dhaka, Bangladesh " N:seven hundred forty five" discovered that many participants in their prior web-based research of the public and college students were unaware of the dengue virus's. According to the researcher's point of view that this is might be due lack of awareness about dengue illness in the local population.

Concerning the studied women' practices regarding prevention of dengue fever pre- guidelines instructions implementation. The findings of the present study suggest that less than fifth of the women interviewed had adequate practices regarding using insect repellent, control mosquitoes indoors and outdoors, and precautions when using insect repellents for prevention of dengue fever, This discovery contradicted with the findings of **Saghir et al. (2022)**, in their descriptive study of what people in the community know, think, and do about Descriptive research on dengue disease in Yemen's Shabwah Governorate, "N: three hundreds seventy". Which revealed that, on a scale from one to nine, the sample group had a mean practice score of 7.84 ± 1.5 , suggesting that they had good practices. On other hands the study carried by **Ayed et al. (2024)**, demonstrated that over four-fifths of the mothers under study exhibited inadequate practices in Dengue fever prophylaxis. The absence of expertise and lack of educational program for women may be the cause of their inadequate prevention practices.

In terms of women's understanding of dengue fever, such as (meaning, causes, risk factors, symptoms, diagnosis, transmission, treatment and prevention), In the present study, it was found that existed highly significant disparities between the knowledge of the women in question regarding dengue fever before and

after the guidelines instruction., this results is supported by the result carried by **Rattanam & Zuharah, (2020)** who conducted an study into the influence of consequences on understanding, perspective, and behavior of health education programs used in educational settings in Kelantan, Malaysia, with respect to dengue control. "N: two hundreds three" who discovered a substantial increase in their overall knowledge score from both trial sites, from between the two assessments. From the perspective of the researchers, the inadequate knowledge about the disease pre guidelines may due to lack of awareness programs in the community about dengue fever, as well as the small number of announced cases and the lack of highlighting them by the media.

According to the studied women' practices regarding to prevention of dengue fever thorough guidelines instruction phases, the current study clarifies that, the majority of the studied women had inadequate practices regarding protection practice against mosquito bites Pre- guidelines instruction implementation. Also, the differences in women's dengue fever prevention measures were highly statistically significant post- guidelines instruction implementation. The inadequate practice of women pre- guidelines may be due to the inadequate information and lack of awareness of the risks. The result of this study is in the same line with **Mohamed & Ragab (2024)**, who illustrated in study about impacts of Educational Guidelines on Mothers' Attitude, Knowledge, and Practices Regarding Preventing Children's Dengue Fever Complications, N: one hundred, found that majority of the studied mothers had an inadequate practice pre-educational guideline

Our hypothesis is supported by the research findings that the health instructional guidelines enhance knowledge, and the present study has revealed that less than one-tenth of the women examined had good total knowledge pre the implementation of the guideline instruction. This knowledge improved to more than half after the guideline instruction was implemented. Additionally, slightly more than one tenth of the women studied had satisfactory total reported practices pre the implementation of the guideline instruction, which improved to more than four fifths after the guideline instruction was implemented. It indicates that the health instructional guidelines had a beneficial impact on the knowledge and practices of women regarding dengue fever. These results are supported by **Abo Elsoud et al., (2023)**, who demonstrated significant gains and improvement in the overall knowledge and the behavior of expectant women both prior to and subsequent to the implementation of educational

guidelines. As to the researchers' perspective, this outcome shows the value of educational guidelines, which met the mother's needs and provided them with sufficient knowledge, attitude, and practice to cope with this disease.

In compliance with women's overall knowledge scores and their total practices scores are correlated. Regarding the prevention of dengue fever through the guidelines instruction phases, the present study demonstrates that there were highly positive statistically significant correlations between the knowledge scores of women and their total practices scores in relation to the dengue fever prevention for both the pre- and post-implementation of the guidelines instruction. From the researchers' perspective, it was evident that insufficient knowledge results in poor practices, which reflects the importance of the educational intervention in improving the knowledge which will be helpful to enhance the practice. This result is in contrast with what was found in **Hamed (2024)**, in Knowledge, attitude, and practices toward dengue fever among the public: a cross-sectional study in the Western region of Saudi Arabia N:six hundred ninety five. Which showed a good knowledge and attitude toward DF among participants. There was no correlation between participants' knowledge and attitude. Spearman correlation between participants' knowledge and practices as well as participants' attitude and practices were positively low. From the researchers' points of view adopting a comprehensive approach that combines education with practical support and policy initiatives, it will be effective to bridge the gap between knowledge and practice in dengue fever prevention.

Conclusion:

Instructional guidelines were succeeded in increasing knowledge, and improving practices of rural women regarding prevention of dengue fever. Minority of studied rural women had good total knowledge pre instructional guideline implementation which improved to more than half of them post-instructional guideline implementation. Less than fifth of studied rural women had satisfactory total reported practices pre instructional guideline implementation which improved to the majority post-guideline instruction implementation.

Recommendations:

- Developing prevention program for women to increase their knowledge and practices about dengue fever.
- Establishing preventive initiatives for women to improve their understanding and behavior around dengue fever prevention.

- Develop public educational campaigns to raise awareness regarding dengue fever.
- Applying travel precaution to prevent the transmission of dengue fever
- More studies on sizable female populations are required to prevent dengue fever and associated complications

References:

- **Abo Eloud, M., Almakarem, A., Hassan, M., Atwa, A., Abu Salem, E., Al Sherbeny & Kamal, W. (2023):** Effect of Educational Guidelines on Pregnant Women's Knowledge, Practice, and Anxiety Regarding Dengue Fever. Egyptian Journal of Health Care, September 2023 EJHC Vol 14. No.3.
- **Alotaibi, N., Alasadi, M., Alotaibi, N., Alotaibi4, A., Alharthi5, F., Alasadi, A & Al Qarni, A. (2022):** CONTROL OF DENGUE FEVER: THE ROLE OF NURSES .journal of Population Therapeutics & Clinical Pharmacology, 29(3), 1694.
- **Anita G, & Jaikumar, M, (2019):** a study to assess the effectiveness of iec package on knowledge, attitude and practice on dengue fever among women at selected rural community in chennai. Journal of Emerging Technologies and Innovative Research (JETIR) 6, 2 www.jetir.org (ISSN-2349-5162)JETIR1902427 www.jetir.org 231.
- **Ayed, M., Elsayed, N., Mohamed, H., & Elbilgahy, A. (2024):** Effect of Educational Guidelines on Mothers' Knowledge, Attitude, and Practice regarding Dengue Fever Complications Prevention among their Children. Egyptian Journal of Health Care, March 2024 EJHC Vol 15. No.1.
- **Centers for Disease Control and Prevention (CDC).2023:** Preventing Dengue. Available at <https://www.cdc.gov/dengue/prevention/index.html> . Accessed on 5-7-2023.
- **Fang,Y., Khater, E., Xue, J., Ghallab, E., Li, Y., & Jiang, T. (2022):** Epidemiology of Mosquito-Borne Viruses in Egypt: A Systematic Review, Viruses14 (7), 1577; <https://doi.org/10.3390/v14071577>.
- **Frank, C., Raskit, L., Hendrik, W., Klaus, S. (2023):** Increase in dengue fever in travellers returning from Egypt, Germany. Euro Surveill,(5)29 <https://doi.org/10.2807/ES.2024.29.5.2400042>. Accessed on 20-7-2023.
- **Harapan, H., Rajamoorthy, Y., Anwar, S., Bustamam, A., Radiansyah, A., Angraini, P., Müller, R. (2018):** Knowledge, attitude, and practice regarding dengue virus infection among inhabitants of Aceh, Indonesia: A cross-sectional study. BMC Infectious Diseases, 18(1), 1–16. <https://doi.org/10.1186/s12879-018-3006-z>.

- **Hamed, M. (2024):** Knowledge, attitude, and practices toward dengue fever among the public: a cross-sectional study in the Western region of Saudi Arabia. *Front. Public Health*, 06 March 2024. Sec. Infectious Diseases: Epidemiology and Prevention. Volume 12 - 2024 | <https://doi.org/10.3389/fpubh.2024.1327427>.
- **Janarthan, Shahi, S., Kumar, B., Patil, P., Srinivase, B & Patel, A. (2023):** Text book for social and preventive pharmacy, 1 st ed., Shashwat publication, India, P. 89,90.
- **Khan, N., Ghufuran, H., Kashif, M., Zeeshan, M & Muhammad, W. (2024):** Knowledge and Practice of Nurses Regarding Dengue Fever and Its Prevention in District Swat, 3(1), 2024 ISSN: 3006-5852 & ISSN: 3006-584.
- **Mohamed, M. & Ragab, N. (2024):** Effect of Educational Guidelines on Mothers' Knowledge, Attitude, and Practice regarding Dengue Fever Complications Prevention among their Children. *Egyptian Journal of Health Care, EJHC* Vol 15. No.1
- **Pan American Health Organization & World Health Organization. (2022):** Guidelines for the Clinical Diagnosis and Treatment of Dengue, Chikungunya, and Zika. Available at <https://iris.paho.org/handle/10665.2/55867>. Accessed on 1-5-2023.
- **Pareek, K & Narsimulu, G. (2019):** Medicine update and progress in medicine. 1 st ed., Jaaple brothers of medical publishers, India ch, 197,p.982-985.
- **Pawaria, A., Mishra, D., Juneja, M., & Meena, J. (2019):** Atypical manifestations of dengue fever. *Indian J Pediatr*; 51(6):495.
- **Rady M. Islam A., Mahmoud K. , Ahmed H., Ehab Y., Salwa M., & Yones M. (2024):** Potential Establishment, Prevalence of Dengue Vector, Aedes sp. and its Risk Map in Hurghada Region, Red Sea, Egypt. *Egyptian Journal of Aquatic Biology & Fisheries Zoology Department*. ISSN 1110 – 6131 Vol. 28(5): 399 – 427 (2024) www.ejabf.journals.ekb.eg
- **Rahman, K. Tanni, T. Roy, M. Islam, M. Rumi, Mohammed Sadman Sakib, M. & Abdul Quader (2023):** Knowledge, Attitude and Practices Towards Dengue Fever Among Slum Dwellers: A Case Study in Dhaka City, Bangladesh. *Int J Public Health*. 2023; 68: 1605364.
- **Rattanam, A. & Zuharah, W. (2020):** School-based health education for dengue control in Kelantan, Malaysia: Impact on knowledge, attitude and practice. *PLoS Negl Trop Dis*. 2020 Mar; 14(3): e0008075. Published online 2020 Mar27. doi: 10.1371/journal.pntd.0008075.
- **Saghir. M., Waled. A., Dhaiban. M. Osman. E., & Abduljabbar. N., (2022):** Knowledge, attitude, and practices of the community toward dengue fever in Shabwah Governorate, Yemen: a descriptive study. *J Egypt Public Health Assoc*. 2022 Dec; 97: 27.
- **Sari, T., Yuliea, M., Siregar, N & Muttaqin, R. (2020):** Knowledge, Attitude, and Practice of Dengue Hemorrhagic Fever Prevention Among Mothers in Endemic and Non-Endemic Locations of Pekanbaru City, Riau Province, Indonesia, June 2020. *Borneo Epidemiology Journal* 1(1):55-66 1(1):55-66. DOI:10.51200/bej.v1i1.2437
- **Schaefer, T., Panda, P & Wolford, R. (2024). Dengue Fever. Available at <https://www.ncbi.nlm.nih.gov/books/NBK430732/>. Accessed on 11-8-2023.**
- **Sukesi, T., Satoto, T., Murhandarwati, E. & Padmawati, R. (2021):** Effects of Health Education Based Intervention on Community's Perception, Healthy House, and Social Capital of Dengue in Endemic Area of Sleman Regency Indonesia. *Scientific Foundation SPIROSKI, Skopje, Republic of Macedonia. Open Access Macedonian Journal of Medical Sciences*. 2021 May 22; 9(E):428-436. <https://doi.org/10.3889/oamjms.2021.6087>
- **The National Environmental Health Association (NEHA):** Environmental Health Programs and Zika. <https://neha.org/zika> 28/1/2018
- **Verma, R., Bhalla, K., Dhankar, M., Kumar, R., Dhaka, R & Agrawal, G. (2019):** Practices and knowledge regarding dengue infection among the rural community of Haryana. Available at *J Family Med Prim Care*. May; 8(5): 1752–1754.
- **World Health Organization, (2023).** Dengue and severe dengue. Available at <https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue>. Accessed on 12-6-2023.

This is an open access article under
[Creative Commons by Attribution Non-Commercial \(CC BY-NC 3.0\)](https://creativecommons.org/licenses/by-nc/3.0/)
 (<https://creativecommons.org/licenses/by-nc/3.0/>)