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Research Article

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"Five F" on Prevention of Disease Transmission Among Mothers of Under Five Children

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Abstract: The pathogenic microorganisms that cause infection, such as "bacteria, viruses, parasites, or fungus," can spread from one person to another either directly or indirectly. Infection spreads through direct contact from person to person, contact of body fluids, any secretions or even the fomite used by the infected person. The oral fecal route can be summarized into five f: - finger, food, fluid, feces, and flies. The Aim and objective of the study were to assess the knowledge regarding Five 'F' diseases transmission among mothers of under-five children to evaluate the effectiveness of sensitization program on knowledge regarding Five 'F' of disease transmission among mothers of under-five children and to find out the association between post-test knowledge scores and selected demographic variables among mothers of under-five children. "Pre-experimental research design" was used for the study and data were collected from 60 under five mothers by "nonprobability convenient sampling method", through a structured knowledge questionnaire. Data were analyzed using "descriptive and inferential statistics" such as standard deviation, mean, and chi-square tests. The mean post-test knowledge score (22.62±3.37) was higher than the mean pretest knowledge score (13.3±3.30). The calculated value (15.28) was more significant than the table value (1.67) at 0.05 level of significance, that shows the sensitization program was effective in increasing the knowledge regarding the prevention of "Five f" (finger, food, fluid, feces, flies) diseases transmission among mothers of under-five children.

Keywords: Five F, Prevention, Disease, Transmission, and Mothers of under five Children

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1. INTRODUCTION

An enormous global burden of disorder by infectious diseases affects public health systems and economies globally, disproportionately harming disadvantaged communities. Over 9 million people died and over 45 million years of productivity were lost in 2013 due to infectious diseases. The leading causes of mortality worldwide include respiratory infections, diarrhea, AIDS, malaria, and TB. Emerging infectious diseases are illnesses that have recently emerged or have long existed but are now quickly expanding in frequency or geographic scope. One of the most common illnesses in people is helicobacter pylori, with seroprevalence estimates as high as 70% globally and up to 80% or more in underdeveloped nations[1]. Although there have been several proposed transmission pathways for Helicobacter pylori, it is generally accepted that it spreads from person to person, either by an oral-to-oral or fecal-oral route[2]. Through the fecal-oral path, enteric pathogens can spread between people either directly or indirectly through contaminated surfaces, foods, or carriers like fomites[3]. The epidemiological triad, a traditional theory of infectious disease etiology, proposes that an infectious disease develops due to a confluence of agent, host, and environmental variables[4]. Infectious diseases can be divided into three categories: those that result in high mortality rates, those that inflict a large cost on populations in terms of disability, and those that, due to the speed and unpredictability of their spread, can have global severe ramifications[5]. On World Health Day 2011, the water supply and collaborative sanitation council stated that while today's childhood illnesses and fatalities are uncommon in these areas, cholera, typhoid, and diarrheal diseases spread through subpar sanitation were the leading causes of illness and death among children in nineteenth-century Europe and North America. However, they are all too familiar in poorer nations. A new study indicates that over half of the yearly "9.20 million" child fatalities are the primary or underlying cause of poor sanitation and hygiene. Sanitation and cleanliness are among the most economically advantageous public health initiatives to lower childhood death, according to compelling, evidence-based analyses[6]. According to the water supply and collaborative sanitation council, Diarrhea disorders are the second leading cause of pediatric death in children, after pneumonia, accounting for 17 percent of deaths in children under the age of five. Additionally, diarrhea has a significant role in stunting and malnutrition. The primary modes of infectious diarrheal illness transmission are referred to as the "fecal-oral cycle." The "five f" fluid (drinking contaminated water), "fields" (human faces contaminating the land and crops), "fingers" (using unwashed hands to prepare food or put it in one's mouth), "food" (eating contaminated food), and "flies" all contribute to this cycle[6]. Around 525 000 children per year die from diarrhea illness, the second most common cause of death in children under five. The body may go several days without the salts and water it needs to survive if diarrhea persists. Past deaths from diarrhea were typically brought on by acute dehydration and fluid loss. Now, it's likely that other factors, like septic bacterial infections, are causing a growing number of deaths related to diarrhea. The population most at risk for developing life-threatening diarrhea, is children, especially those who are underweight or have weakened immune systems[7]. Breaking the fecal-oral cycle, which depends mainly on handwashing and the use of toilets or latrines that contain and sanitize fecal matter, can benefit mothers of children under the age of five and save children's lives.

1.1 Aim and Objective

1. To assess the knowledge regarding Five 'F' disease transmission among mothers of children under five.
2. To evaluate the effectiveness of the sensitization program on knowledge regarding Five 'F' disease transmission among mothers of children under five.
3. To find the association between post-test knowledge scores and selected demographic variables among mothers of children under five.

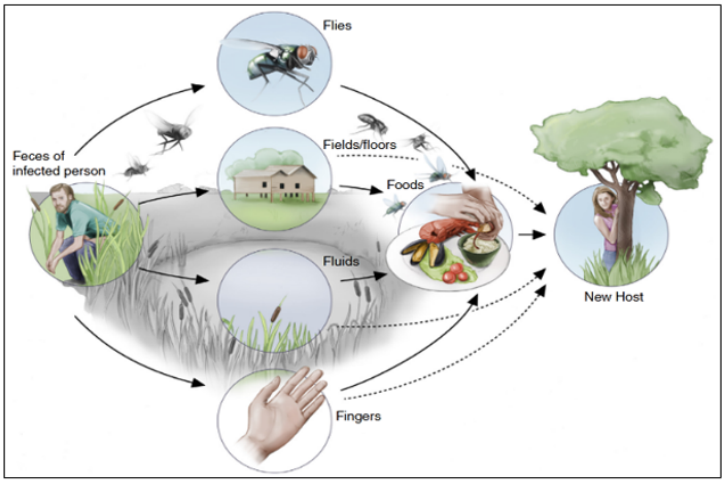

Figure 1. Fecaloral transmission between humans. After shedding from the host, enteric pathogens can be transmitted between humans by the fecal-oral route via direct contact or via indirect contact via contaminated fluids, including surface water, food, and carriers such as fomites.

Fig 1: Fecal oral transmission

2. MATERIALS AND METHODS

2.1 Research Approach

The research approach is a strategy and process that progresses from general hypotheses to specific techniques for gathering, analyzing, and interpreting data. The research approach used for this study was the quantitative research approach.

2.2 Research Design

The framework of the research methods and techniques a researcher selects to carry out a study is known as the

research design. The research design selected for the present study was pre-experimental one-group pretest, post-test design

2.3 Research Setting

The research setting is referred to as the physical, social, or experimental context in which research is carried out. The setting for study was undertaken in Gothava village of Visnagar in Gujarat state.

2.4 Population

A research population is typically a sizable group of people or things that serve as the main subject of a scientific inquiry. For example, mothers of children under five are the population of the study.

2.5 Target Population

The persons in the intervention's target population are the ones on whom research would be done and conclusions will be drawn. In this study, mothers of children under five in selected areas of Visnagar of Gujarat state.

2.6 Accessible Population

The segment of the target population that is available to the researcher is known as the accessible population. In this study, accessible population is Mothers of children under five in Gothava, Visnagar.

2.7 Sampling

Sampling is choosing a portion of the target population for a research project. A non-probability convenience sampling technique was used for this study.

2.8 Sample Size

The sample size is the number of individuals or observations included in a study. This study's sample size consists of 60 Mothers of children under five in Gothava, Visnagar.

2.9 Sampling Criteria

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
➢ Mothers of under five children those who are lives in the rural areas. ➢ Mothers of under five children those who are willing to participate in the study. ➢ Mothers of under five children who are present during the time of data collection.	➢ Mothers of under five children who are not available during data collection. ➢ Mothers of under five children who not know Gujarati language.

Table 1 shows the inclusion and exclusion criteria for sample selection.

2.10 Description of The Instruments

The tool used to collect the data is a structured knowledge questionnaire to assess mothers' knowledge regarding prevention of Five F' (food, finger, fluids, flies, and feces) disease transmission in children. It consists of two parts. Part I and Part II.

Part I- Socio demographic data

Part II- Structured knowledge questionnaire to assess mothers' knowledge regarding prevention of Five F (food, finger, fluids, flies and feces) disease transmission in children.

Part I-It consists of demographic variables of mothers such as age, religion, type of family, education, occupational, family monthly income, number of children, age of children, history of infectious disease in children, waste disposal, drainage system and sources of information regarding the prevention of 5f disease transmission.

Part II- It consists of items on knowledge related to the prevention of Five F (food, finger, fluids, flies, and feces) disease transmission in children. It consists of 30 multiple-choice questions having four responses with one correct answer. The structured knowledge questionnaire includes three aspects of infectious disease as follows:

General information on the infectious disease

Prevention of food-borne disease

Prevention finger borne disease

Prevention of waterborne disease

Prevention of fly borne disease

Prevention of feces-borne disease

2.11 Scoring and Interpretation

Table 2: Scoring and interpretation

Level of knowledge	Scores	Percentage
Inadequate	<15	<50
Moderate	15-23	51-75
Adequate	23-30	76-100

Table 2 shows that scoring and interpretation key to assessing knowledge regarding Five "F" disease transmission.

2.12 Data Collection Procedure

The data was collected from mothers in selected areas of Visnagar. Written permission was sought and obtained from the authorities concerned. The period of data collection was four weeks. About 60 mothers were selected as per the criteria mentioned above with prior informed consent were taken to participate in the study. Initially, good rapport was maintained with the mothers and the purpose of the study was explained to them. Mothers were made comfortable, and the

privacy was maintained. Instructions to answer the questionnaire were given. A pretest was conducted through a structured knowledge questionnaire to assess the mother's knowledge on preventing child disease transmission of Five F (food, finger, fluids, flies, and feces). Then sensitization program was taken to the mothers. After 7 days of administering of sensitization program, a post-test was conducted for the mothers with the same structured knowledge questionnaire to assess their knowledge. All the subjects were very cooperative and the investigator expressed her gratitude for their cooperation.

2.13 Ethical Consideration

Explain the purpose of the study. Informed written consent was obtained from the participants. Complete freedom is given to decide whether to participate in the study. The nature of the study was explained to each participant in detail and no physical or psychological harm was produced during the study. Had the right to quit the study at any time during the study.

2.14 Limitation

- Unavailability of sample
- Lack of cooperation from the sample

2.15 Data Analysis

The investigator analyzed the data in the following manner. First, the respondent's personal information was analyzed using frequency and percentages and presented in the form of a table and graph. The data from structured questionnaires before and after the administration of the planned teaching program have been analyzed (manually) by using mean, standard deviation, and 't' test and presented in the form of tables and graphs.

3. RESULTS

Table 3: Frequency and percentage distribution of pre and post test level of knowledge among mothers of under-five children

Level of knowledge	Pre test		Post test	
	Frequency	%	Frequency	%
Inadequate	40	66.67%	0	0 %
Moderate	20	33.33%	25	41.67%
Adequate	0	0	35	58.33%

Table3 shows that before the administration of the sensitization program, in pretest (66.67%) sample had inadequate knowledge, and (33.33%) had moderate knowledge. In the post-test, there was marked improvement in the level of knowledge of the sample with (41.67%) moderate level of knowledge and (58.33%) had adequate knowledge.

Table 4: Mean, Standard deviation, Mean difference and 't' value of pretest and post-test level of knowledge regarding prevention of "five f" (finger, food, fluid, feces, flies)

Parameter	Mean	SD	Mean difference	't' value	Table 't' value	Level of Significance 0.05
Pretest	13.3	3.2950	9.32	15.28	1.67	S
Post-test	22.66	3.3703				

Table 4 shows that the mean post-test knowledge score (22.62±3.37) was higher than the mean pretest knowledge score (13.3±3.30). The calculated value (15.28) was more significant than the table value (1.67) at 0.05 level of significance that shows the sensitization program was effective in increasing the knowledge regarding the prevention of "five f" (food, finger, fluid, flies, feces) diseases transmission among mothers of under-five children.

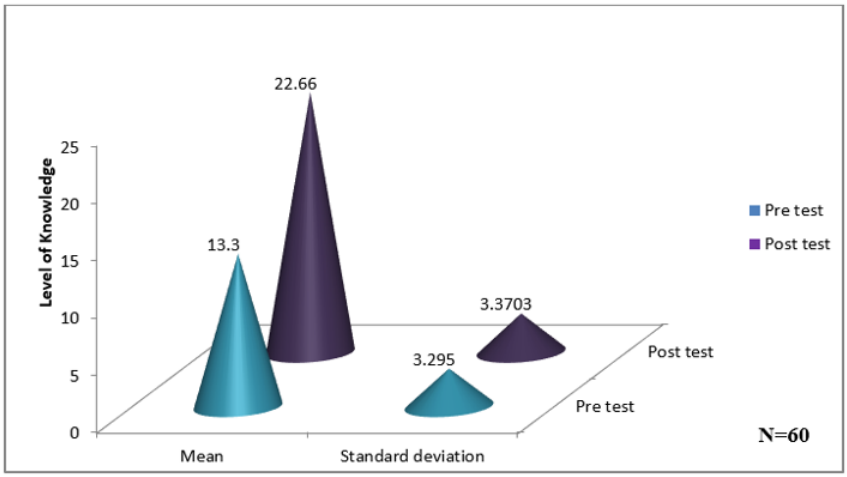

Figure 2 shows that the mean post-test knowledge score (22.62±3.37) was higher than the mean pretest knowledge score (13.3±3.30). The calculated' value (15.28) was more significant than the table value (1.67) at 0.05 level of significance that shows the sensitization program was effective in increasing the knowledge on prevention of "Five f" (food, finger, fluid, flies, feces) diseases transmission among mothers of under-five children

Fig- 2: Effectiveness of sensitization program on knowledge regarding prevention of "Five f" (finger, food, fluid, feces, flies)

Table - 5 Association of the post-test level of knowledge among mothers of children under five with their selected demographic variables.

S.No	Variables	Category	Frequency	Level of knowledge		D.f.	Table value	Chi-Square	Significant P =0.05%
				Adequate (23-30)	Moderate (15-22)				
1	Age	20-25	26	10	16	3	7.82	10.17	S
		26-30	19	15	04				
		31-35	10	08	02				
		36 or above	5	02	03				
2	Religion	Hindu	50	29	21	1	3.84	0.0137	NS
		Others	10	06	04				
3	Educational status	Primary	20	16	04	3	7.82	8.90	S
		Secondary	28	15	13				
		Under graduate	10	03	07				
		Post graduate and above	02	02	00				
4	Work	Private	08	04	04	3	7.82	0.5689	NS
		Government	07	04	03				
		Own business	13	07	06				
		Unemployed	32	20	12				
5	Family monthly income	5000-10,000	10	04	06	3	7.82	2.0749	NS
		10,001-15,000	29	19	10				
		15,001-20,000	11	06	05				
		20,000 above	10	06	04				
6	Number of children	1	26	16	10	3	7.82	1.61545	NS
		2	19	10	09				
		3	10	05	05				
		More than 3	05	04	01				
7	Age of children	Less than 1 year	13	04	09	4	9.49	8.5086	NS
		1-2	28	16	12				
		2-3	08	06	02				
		3-4	09	08	01				
		4-5	02	01	01				
8	History of infectious disease	Yes	51	30	21	1	3.84	0.0336	NS
		No	09	05	04				
9	Frequency of hand washing by mother.	1-2	22	14	08	3	7.82	1.32824	NS
		3-4	17	12	05				
		5-6	26	15	11				
		More than 6	05	04	01				
10	Frequency of hand washing by child.	1-2	11	06	05	2	5.99	1.31548	NS
		3-4	36	23	13				
		5-6	13	06	07				
		More than 6	00	00	00				
11	Drainage system	Open	19	10	09	1	3.84	0.3719	NS
		Closed	41	25	16				
12	Source of information regarding five f disease transmission	News paper	16	08	08	3	7.82	0.96	NS
		Television	20	13	07				
		Friends or relatives	04	02	02				
		Health Personnel	20	12	08				

S- Significant NS- Non Significant

Table 5: According to chi-square analysis level of knowledge was significantly associated with age, and educational status. The study concluded that there was a strong correlation between the post-test stress levels among seniors and chosen demographic factors.

Table 6: Summary statistics of the questionnaire

Item No	Item description	Mean (SD)	Skewness	Kurtosis	Missing data(n)a	Original article mean (SD)b	Original factor structure
1	Infectious diseases can be	3.15 (1.19)	–0.132	–0.887	1	2.40 (1.31)	OS
2	What is the meaning of infection?	2.34 (1.34)	0.279	–0.983	0	2.12 (1.36)	OS
3	Which population is at risk of 5F's disease?	2.65 (1.18)	0.176	–0.831	0	2.43 (1.21)	OS
4	Which system is weak for affected 5f's disease?	2.22 (1.24)	0.522	–0.816	0	1.43 (1.00)	OS
5	What type of precaution method to check while purchasing food items?	2.16 (1.14)	0.587	–0.767	0	1.872 (1.08)	OS
6	What are precaution activities follow before having raw fruits and vegetables?	1.62 (1.10)	1.432	1.021	0	1.69 (1.09)	OS
7	Which temperature level raw food should be stored?	2.28 (1.28)	0.613	–0.880	1	1.52 (1.00)	OS
8	Which type of cooking method used for Raw meat?	2.80 (1.21)	0.025	–1.159	0	2.01 (1.15)	OS
9	Which Lab test is used for food borne disease?	2.64 (1.20)	0.187	–1.101	0	2.27 (1.27)	OS
10	What is the Source of fly born disease?	2.80 (1.25)	0.112	–1.206	0	2.05 (1.23)	OS
11	Which disease spread due to House flies?	2.73 (1.33)	0.187	–1.079	0	1.86 (1.26)	OS
12	What is preventive items protect from flies?	2.89 (1.15)	0.049	–1.048	0	3.47 (1.21)	SIS
13	Which method is helpful in prevention of contamination of foods by flies?	2.13 (1.23)	0.749	–0.415	0	2.22 (1.35)	SES
14	What is the type of water borne disease?	1.88 (0.79)	0.736	0.254	1	2.44 (1.02)	SES
15	which is the example for the most common waterborne disease?	1.84 (1.02)	0.908	0.073	2	2.49 (1.33)	SES
16	What is the Most common reported symptoms of water borne disease?	4.16 (0.97)	–1.322	1.161	0	4.07 (1.13)	SIS
17	Which is the Early symptoms of fluid loss?	3.38 (1.21)	–0.349	–1.054	0	3.15 (1.29)	SIS
18	Which is the cause of Faeces borne disease?	3.06 (1.33)	–0.048	–1.301	0	2.82 (1.38)	SIS
19	Which organ can affected of germs by Infectious body fluids, dirty diapers and surfaces?	1.40 (0.94)	1.964	3.287	0	1.81 (1.11)	SES
20	What kind of thing will improve Immunity in infant?	3.36 (1.13)	–0.360	–0.915	0	3.17 (1.28)	SIS
21	Which method is used to kill micro organisms in milk?	3.21 (1.16)	–0.103	–0.937	0	3.11 (1.30)	SIS
22	Which one is the best measure to prevent waterborne disease in drinking?	1.762 (1.11)	1.342	1.131	0	1.78 (1.18)	OS
23	What is the best measure to prevent finger borne disease?	2.37 (1.37)	0.622	–0.891	1	1.63 (1.11)	OS
24	How can Infectious disease transmission be controlled?	2.91 (1.21)	0.034	–1.168	0	2.12 (1.15)	OS
25	How much time do to wash your hands before handling food?	2.73 (1.31)	0.198	–1.112	0	2.36 (1.36)	OS
26	How can food-borne disease be prevented?	2.91 (1.34)	0.101	–1.215	0	2.154 (1.23)	OS
27	What is the effective way to control flies?	2.84 (1.32)	0.187	–1.088	0	1.95 (1.25)	OS

28	Which condition is prevented by ORS?	2.98 (1.20)	0.057	–1.057	0	3.56 (1.30)	SIS
29	What is the complication of untreated severe fluid loss?	2.24 (1.24)	0.758	–0.404	0	2.11 (1.34)	SES
30	What is the complication of untreated severe fluid loss?	1.97 (0.88)	0.745	0.263	1	2.53 (1.12)	SES

OS: objective strain, SIS: subjective internalized strain, SES: subjective externalized strain

4. DISCUSSION

The study's objective was to evaluate the effectiveness of sensitization program on knowledge regarding Five 'F' disease transmission among mothers of under-five children The study's findings show that the systematic sensitization program successfully enhanced under-five mothers' knowledge. Annamred di Leelavathi conducted a similar study in Raipur. The survey found that 10% of all moms with children under five have inadequate knowledge or five out of every fifty women. In addition, only 11% of mothers out of 50 have moderate knowledge (22% of the whole data), while 34% of mothers out of 50 have adequate knowledge (more than 68% of the complete data). Data analysis demonstrates that the mean test score is 24.58, with a standard deviation of 2.99. This study concluded that the information pamphlet was effective to enhance knowledge regarding five f disease transmission[8]. Berde conducted a study regarding diarrhea prevention programs in Nigeria. Through that study he concluded that interventions such as information, education and communication programs on hygiene and sanitation was helpful in improving knowledge regarding the prevention of diarrhoea in Nigeria [9]. A cross-sectional study design was carried out in in Eastern Ethiopia. Stool specimens were collected and processed using enrichment, differential and selective medium. Among isolates, E. coli was confirmed using latex test. This study concluded that through the fecal oral route infection are transmitted to others[10]. A community-based cross-sectional study was conducted from April to June 2016 among 736 randomly selected households with one child under five years old. A structured questionnaire collected information on sociodemographic characteristics and diarrheal occurrence. The result of the study shows that children with the age group of less than one-year-old were commonly infected with diarrheal diseases[11].Multivariate Poisson regression was used to assess risk factors for severe cholera among diarrheal patients presenting at hospitals in Matlab (rural) and Dhaka (urban), Bangladesh. Risk increases with age. Compared to those under one, rural and urban four-year-olds had adjusted risk ratios of 4.17 respectively[12]. E. Aiello (2017) conducted a meta-analysis study to assess the effect of hand hygiene on infectious disease risk in the community setting. 4 electronic databases for hand-hygiene trials published were selected for the study. Results showed that Improvements in hand hygiene resulted in reductions in the gastrointestinal illness of 31% (95% confidence intervals [CI]=19%, 42%) and reductions in the respiratory illness of 21% (95% CI=5%, 34%). The most beneficial intervention was hand-hygiene education with use of nonantibacterial soap. Thus the study concluded that hand hygiene is effective against gastrointestinal and, to a lesser extent, respiratory infections[13]. M.A.Mahmud (2015) conducted a cross-sectional study to assess the efficacy of hand washing with soap and nail clipping on parasitic intestinal infections in school-aged children. Three hundred sixty-seven parasite-negative school-aged children (aged 6–15 y) were randomly assigned to receive interventions. Thus the study concluded that hand washing with soap at critical times and weekly nail clipping significantly decreased intestinal parasite reinfection rates. Furthermore, the handwashing intervention significantly reduced anemia prevalence in children[14]. The current study concluded that the sensitization program was effective in increasing the knowledge regarding the prevention of "Five f" (finger, food, fluid, feces, flies) diseases transmission among mothers of under-five children.

5. CONCLUSION

This study finding reveals that there is a significant association between demographic variables age, education status of the mother and level of knowledge regarding the prevention of "five f" (finger, food, fluid, feces, flies) diseases. The 't' value was 15.28 which is higher than the table value at [p 0.05] level, which shows improved knowledge after a sensitization programme among mothers of children under five. These findings suggested more extensive programs are to be held in rural areas to bring awareness on "five f". Nurses are responsible for giving information regarding the prevention of five f disease transmission in children to mothers for preventing or managing the infectious disease. The nursing students should be motivated to give health education at the hospital and community level in preventing "five f" disease transmission in children to the mothers. Nurse administrators can organize a staff development program for nurses to update their "five f" knowledge.

6. AUTHORS CONTRIBUTION STATEMENT

Patel Arpit Kandarp kumar conceptualized, designed and gathers data. N Siva Subramanian analyzed these data, and inputs were given B. Mahalakshmi and Prakash D discussed the methodology, and results and contributed to the final manuscript.

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8. CONFLICT OF INTEREST

Conflict of interest declared none

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