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Effectiveness of Systematic Educational Program on Knowledge regarding 5 F's of Disease Transmission

Nikil J V*[1], Nageshwar Venkatesh Reddy[2], Sabah Hassan El-Amrosy[3], Wessam Fathi Mohamed Gabr[4], Amutha Chellathurai[5], Kandasamy Muthugounder[6], Tahani Ali Salem Maharem[7], Badria Mahrous Abdelhameed Mohammed[8]

[1]Department of Community healthy nursing, Adichunchanagiri College of nursing, Adichunchanagiri university, B G Nagara, Nagamangala Taluk, Mandya district, Karnataka, India. jvnikil@gmail.com
[2]Department of Mental Health and Psychiatric Nursing, Faculty of Nursing, Al-Baha University, Kingdom of Saudi Arabia. nreddy@bu.edu.sa
[3]Assistant Professor of Psychiatric and Mental Health Nursing, Faculty of Nursing, Al-Baha University, Saudi Arabia. Professor of Psychiatric and Mental Health Nursing, Faculty of Nursing, Menoufia University, Egypt
[4]Assistant Professor of Medical Surgical Nursing, Medical Surgical Nursing Department, Faculty of Nursing, Al-Baha University. Assistant Professor of Medical Surgical Nursing, Medical Surgical Nursing department, Faculty of Nursing, Beni Suef University.
[5]Ph.D Scholar, Saveetha College of Nursing, Saveetha University, India, Lecturer College of Nursing, King Khalid University, Abha, Kingdom of Saudi Arabia. attori@kku.edu.sa
[6]Associate Professor, Community and Mental Health Nursing Department College of Nursing, Khamis Mushait, King Khalid University, Abha, Kingdom of Saudi Arabia. kandasamy.phd@gmail.com
[7]Assistant professor of Medical Surgical Nursing ,Medical Surgical Nursing Department, Faculty of Nursing Al- Baha University, Saudi Arabia. Medical- Surgical Nursing Department, Faculty of Nursing, Alexandria University, Egypt.. E- mail med.sur87@gmail.com
[8]Affiliated to Medical Surgical Nursing department, Faculty of Nursing, Al-Baha University, KSA; Assistant prof. of Medical Surgical Nursing, Faculty of Nursing, Menoufia University, Egypt

ABSTRACT

Background And Objective: Food, finger, fluid, fomite, and faeces are the 5 F's through which infectious diseases are spread from one person to another. Children are more susceptible to infectious disease, which is a huge public health issue. Therefore, it is essential to spread health information in order to raise awareness of health issues and change behaviour in a way that would promote good health and avoid sickness. Hence the focus of this study aimed to evaluate the effectiveness of systematic educational program on5 F's of disease transmission among school going children at Nagamangala(Tq), Mandya(Dist). Materials And Methods: The study employed a pre-experimental one-group pre-test post-test design and evaluative approach. A total of 120 selected school going children at Nagamangala(Tq), Mandya(Dist) were selected for the study through simple random sampling technique. Data collection took place over a period of one month, from August 17th2022, to September 17st 2022. Data was collected using demographic Performa and structured knowledge questionnaire. The structured knowledge questionnaire was validated by experts and its reliability was established. Results: The total analysis of schoolchildren's knowledge levels regarding5 F's of disease transmission showed that mean knowledge scores of the subjects at pre-test were 9.8 ±3.244 However, after the intervention there was a significant increase in knowledge score with a post test mean score of 22.24 ±3.01 and computed t=2.86and p value was significant at 0.05 level of significance. The results of chi square analysis showed that there was significant association between knowledge scores with age, gender, education status, income status, type of diet and previous information at $p<0.05$ level of significance. Conclusion: The program impacted on enhancing knowledge, this leads to the conclusion that the systematic educational program is successful in raising students' level of knowledge. And there was a significant association between level of knowledge of school going children and selected demographic variables such as Age, gender, education status, religion, source of information, income, type of diet and previous information.

KEYWORDS: Knowledge, school going children; 5 F's of disease transmission, systematic educational program.

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INTRODUCTION

The meaning of health has evolved over time. In keeping with the **biomedical** perspective, early definitions of health focused on the theme of the body's ability to function; health was seen as a state of normal function that could be disrupted from time to time by **disease** (Park. K 2015).

World Health Organization defines health as a State of complete physical mental and social well-being and not merely an absence

of disease or infirmity. A healthy person is an asset to the society. An unhealthy lifestyle and practices among an individual will lead to a disease (Bijayalakshmi D 2017).

Today, there is an increased focus on wellness, self-care, and health promotion. It is believed that a wellness-focused lifestyle is what leads to good health. Various health promotion initiatives, such as risk reduction, nutrition, lifetime health monitoring programmes, environmental health programmes, and health education, have developed as a result. Dissemination of health information is one of the ways of increasing knowledge on health and modification of behaviour which is directed towards promotion of health and prevention of disease (Aiswarya Ittianath 2011).

Children are the foundation of a strong and healthy nation. Children constitute more than 1.2 billion worldwide, and about 29% of Indian population. Morbidity and mortality occurring in this age group is mostly due to preventable causes. Young and growing children have poor knowledge and lack of awareness about communicable disease transmission and the ill health affecting them. The major barriers for this are: lack of accurate information, absence of proper guidance, parent's ignorance, lack of skills and insufficient services from health care delivery system (Sivagurunathan C, Umadevi R, Gopalakrishnan S 2015).

Schools can play a major role in helping to reduce or prevent the incidence of illness among children and adults in our communities. Encouraging good hand hygiene and following cleaning recommendations contribute to a safe and healthy learning environment for children. When schools report illness to their local health department (LHD), public health specialists can assist schools with disease prevention and control guidance. This document provides schools with general information on what steps they can take to prevent and control communicable disease (Erin Kavanagh 2016).

The entry of the causative agent of the disease into the human body and its multiplication is known as the infection. A disease is caused due to a specific organism or by its toxic products. It is transmitted from man, animal, or from environmental agents like food wastes, air, soil and dust, fluid, flies, faeces and fomite which is called 'communicable disease'. These infectious agents may transmit through 5 F's i.e. Faeces, Fingers, Food, Fluids and Fomites. As a result of the growing prevalence of communicable diseases and the related cost burden, health promotion and illness prevention is increasingly important (Park. K 2015).

Food- and water-borne infections have afflicted mankind since the earliest days of human development and preceded the emergence of civilization. Despite current knowledge of microbial pathogenicity, modern methods of food production and rigorous industrial hygiene, these infections are still commonplace and exact significant health and economic tolls on human populations in all parts of the globe. This review uses data derived from new surveillance networks to survey the current epidemiology of bacterial, protozoan and viral pathogens transmitted by food and water (Fleckenstein JM, Et.al 2010).

As the name suggests, faecal-oral diseases are diseases that occur when the causative organisms which are excreted in the stools of infected persons (or less commonly animals) gain entry into the human host via the mouth. Therefore, the organisms have to pass through the environment from the faces of an infected person to the digestive system of a susceptible person. This is known as the faecal-oral transmission route. Faecal-oral transmission of organisms causing disease occurs mostly through faecal contamination of food, water, and hands which is not at all apparent. Very small amounts of faeces can carry enough organisms to establish infection. Seemingly sparkling clear water may be dangerously polluted. Contaminated food may smell, look and taste normal and yet harbor infective organisms. Clean-looking hands may carry and transmit enough micro-organisms to spread disease (Kamalam S 2005).

A passing of or more liquid or loose stools per day, or more frequently than for an individual, is referred to as diarrhoea. (WHO, 2017c). Diarrheal illnesses' global epidemiology is as follows: Annually, there are 1.7 billion instances of diarrhoea, preschool and school going children, immuno-compromised and travellers are more at risk, the developing countries are more at risk, E.coli and Rotavirus are the leading causes of diarrhoea in developing countries (Emmanuel H, Ummiabdul, Situ mhunzi 2017).

Microorganisms can infect hands directly or indirectly through contact with contaminated surfaces. If hands are contaminated can spreads the infection by rubbing one's eyes nose or allowing the infectious particles enter in to the mouth. Example: respiratory infection, G.I. tract infection like typhoid, skin infections. Washing the hands is one of the easiest and best ways to prevent the spread of diseases. Hands should be washed frequently including after toileting, coming into contact with bodily fluids (such as nose wiping), before eating and handling food, and any time hands are soiled. It is also important that children's hands be washed frequently (San Francisco 2017).

In underdeveloped nations, where they are widely present, schistosomes and soil-transmitted helminths (STH) like hookworms (Trichuris trichiura and Ascaris lumbricoides) infect around 230 million and 1.5 billion people, respectively. There is little information on how the parasites interact in co-infected people despite the fact that the parasites are usually co-endemic and that many people have co-infections with two or more species (Almansour M Et.al 2016).

Fomites are surfaces or items that can contain pathogenic bacteria and act as transmission vehicles. They can be porous or nonporous. Fomites can become infected with a virus through direct contact with body fluids, soiled hands, talking, sneezing, coughing, or vomiting, or by being exposed to an airborne virus that settles after a contaminated fomite is disturbed (i.e., shaking a contaminated blanket). Once a fomite is contaminated, the spread of an infectious virus between inanimate and animate items, or vice versa, as well as between two different fomites is easy to achieve if brought together (Stephanie A B, Charles P G, 2013).

Viruses that can spread to other people can be found in blood and body fluids like saliva, sperm, and vaginal fluid. You may

contract HIV, Hepatitis B, Hepatitis C, or other blood-borne diseases if you come into touch with someone else's blood or body fluid. The world is also home to an endemic strain of hepatitis B (HBV) (Elizabeth Boskey, PhD, 2016)

MATERIALS AND METHODS:

METHODS

Designs and samples:

This study employed a pre-experimental design, specifically a one-group pre-test and post-test approach, to assess the effectiveness of a systematic educational program. The research was conducted at Adichunchanagiri Higher primary School B G Nagara, due to its geographical proximity and familiarity. The target population comprised School going children who met the inclusion criteria. A total of 120 school going children are estimated with confidence level of 95% and margin of error 5% using finite population formula with conveniently selected for the study using simple random sampling technique, providing an accessible and representative sample for the research investigation.

Finite Population Formula

$$n' = \frac{n}{1 + \frac{z^2 * \hat{p}(1-\hat{p})}{\varepsilon^2 * N}}$$

z- z score
e- Margin of error
N- Population size
p- Population proportion

Sample size estimated as 120 with confidence level of 95% and margin of error 5%

MATERIALS

A tool was developed to assess knowledge about 5 F's of disease transmission among school going children. To ensure its accuracy, the tool was reviewed by 5 experts in Community health nursing, epidemiologist and physician. The tool has two sections: Section A (13 items) for socio-demographic data and Section B (30 items) for assessing knowledge about 5 F's of disease transmission. The tool's reliability was tested on 12 children using test-retest method, yielding a reliability quotient of 0.91, indicating high consistency. This validated tool can now be used to effectively assess knowledge about 5F's of disease transmission.

Table 1: The different levels of knowledge are categorized as follows:

Score (%)	Knowledge
1-15 (≤ 50%)	Inadequate
16-22 (51%-75%)	Moderate
23-30 (>75%)	Adequate

Data Collection Procedure:

Data collection commenced after obtaining formal written permission from the Adichunchanagiri Higher primary School Head Master, B G Nagara. A three-phase approach was employed: Phase I involved a pre-test questionnaire on 5 F's of disease transmission administered to 120 children, Phase II comprised a systematic educational program on 5 F's of disease transmission, and Phase III entailed a post-test questionnaire seven days later. The data collection process was smooth, with no issues encountered and high subject cooperation. The collected data was subsequently compiled for analysis.

SECTION – I

DEMOGRAPHIC CHARACTERISTICS OFSCHOOL GOING CHILDREN

Table 2: Frequency and percentage distribution of selected demographic variables of School going children.

N= 120

Sl. No	Demographic variables	Frequency (n)	Percentage (%)
1.	**Age of the school going children**		
	A. 10 years	11	9.16
	B. 11 years	32	26.67
	C. 12 years	77	64.17
2.	**Gender**		
	a. Male	56	46.67
	b. Female	64	53.33

3.	**Education status**		
	5th standard	36	30
	6th standard	20	16.67
	7th standard	64	53.33
4.	**Relegion**		
	a. Hindu	102	85
	b. Christian	3	2.5
	c. Muslim	8	6.67
	d. Others	7	5.83
5.	**Type of family**		
	a. Joint	81	67.5
	b. Nuclear	39	32.5
6	**Mother's education level**		
	a. No formal education	9	7.5
	b. Primary education	13	10.84
	c. High school education	49	40.83
	d. PUC & above	49	40.83
7	**Father education level**		
	a. No formal education	12	10
	b. Primary education	27	22.5
	c. High school education	39	32.5
	d. PUC & above	42	35
8	**Parents monthly income**		
	a. BelowRs.10,000	51	42.5
	b. Rs.11,000-20,000	37	30.83
	c. Rs.21,000-30,000	14	11.67
	d. Rs.31,000 and above	18	15
9	**Type of diet**		
	a. Vegetarian	19	15.83
	b. Mixed	101	84.17
10	**Previous knowledge about 5 F's of disease transmission**		
	a. Yes	20	16.67
	b. No	100	83.33
11	**Source of information**		
	a. Television	10	50
	b. You tube/ social media	10	50
12	**Father occupation**		
	a. Health personnel	3	2.5
	b. Teacher	13	10.83
	c. Agriculture	49	40.84
	d. Any other specify	55	45.83
13	**Mothers occupation**		
	a. Health personnel	10	8.33
	b. Teacher	12	10
	c. Agriculture	34	28.33
	d. Any other specify	64	53.34

The demographic characteristics of the 120school going children revealed that the majority (64.17%) were between 12 years old, followed by 26.67% in the 11years, and 9.6% in the 10 years group. The majority 53.33% of the subjects belong to 7th standard, 30% were 5th standard and remaining 16.67% were 6th standard. The 85% of the subjects belongs to Hindu religion, 2.5% of subjects are belongs to Christian and 6.67% are Muslims remaining 5.83% of them were other. 67.5% of the samples are belongs

to joint family and32.5% of them are belongs to nuclear family. The 7.5% of the subjects had no formal education, 10.84% had primary education, 40.83% had high school education and 40.83% had PUC & above. The 10% of the subjects had no formal education, 22.5% had primary education, 32.5% had high school education and 35% had PUC & above. 42.5% of the subjects belongs to below Rs. 10,000 and 30.83% are between Rs.11,000-20,000, 11.67% were between Rs.21,000-30,000 and 15% are Rs.31,000 and above. 15.83% of the subjects are vegetarians and 84.67% are mixed.16.67% of the subjects having previous knowledge about 5 F's of disease transmission and 83.33 were not having. The 50% of the subjects got previous knowledge about 5 F's of disease transmission through television, 50% got information through You tube/ social media.2.5% of the subjects are health personnel, 10.83% are teachers, 40.84% are belongs to agriculture and 45.83% were other occupation. And the 8.33% of the subjects are health personnel, 10 % are teachers, 28.33% are belongs to agriculture and 53.34% were other occupation.

SECTION II: GENERAL INFORMATION REGARDING CONCEPT OF DISEASE AND VARIOUS MODES (5F'S) OF DISEASE TRANSMISSION

Table 3: Pretest and post-test knowledge level of the school going children.

n=120

Level of knowledge	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
a. Inadequate knowledge (<50%)	116	96.7	3	2.5
b. Moderate knowledge (50-75%)	4	3.3	59	49.2
c. Adequate knowledge (>75%)	0	0	58	48.3

The above table depicts the majority 96.7% of the school going children had inadequate knowledge and 3.3% had moderate knowledge in the pretest. After administration of the systematic educational program 48.3% of the subjects had adequate knowledge, 49.2%had moderate knowledge regarding 5 F's of disease transmission.

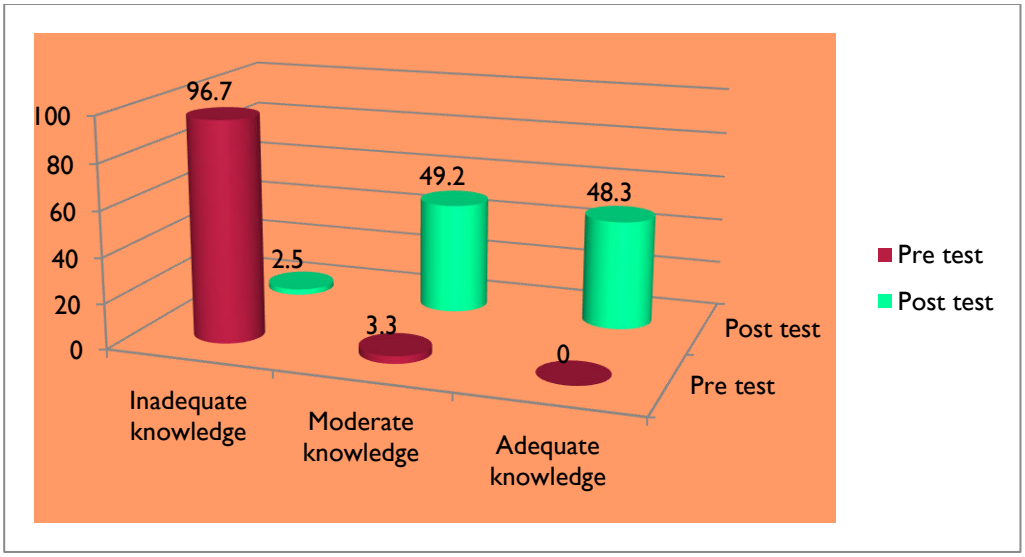

Fig 1: Pretest and post-test knowledge level of the school going children

SECTION III
COMPARISON OF THE KNOWLEDGE LEVEL OF SCHOOL GOING CHILDREN

Table 4: Overall and area-wise comparison of knowledge scores of schools going children.

n=120

Sl.		Pre test	Post test	Mean				

No.	Knowledge aspects	Mean	S D	Mean	S D	Enhancement	Calculated t Value	Df	Tabulated t value	Inference
1	General information regarding concept of disease and various modes of disease transmission	4.90	1.88	9.90	1.89	5	5.660	119	1.98	S
2	Risk factors, signs and symptoms and complication of disease transmission through 5 F's	1.86	1.20	4.69	1.10	2.83	6.789	119	1.98	S
3	Prevention of 5 F's of disease transmission	3.08	1.83	7.64	1.35	4.56	6.710	119	1.98	S
Overall		9.8	3.24	22.24	3.01	12.44	2.86	119	1.98	S

Table value t (119) = 1.98, p<0.05

The above table 4 represents the overall mean enhancement of the knowledge score was 12.44 and the "t" value 2.86 is greater than the table value at 1.98. Therefore, "t" value is found to be significant. Hence the systematic educational program is effective in enhancing the knowledge of school going children regarding 5 F's of disease transmission. 't' table value at 0.05 level of significance at df_{119} is 1.98.Hence 't' calculated value is not less than' t' tabulated value hence we are accepting research hypothesis H_1.

Section 4: ASSOCIATION BETWEEN PRETEST KNOWLEDGE OF SCHOOL GOING CHILDREN AND THE SELECTED DEMOGRAPHIC VARIABLES.

Table 5: Association between pre-test knowledge of school going children and the selected demographic variables.

n=120

Variables	Below Median	edian and above	Obtained Chi square	Df	Chi square tabulated value	Inference
1. Age in years						
a. 10 years	9	2	30.61	2	5.99	S*
b. 11 years	24	8				
c. 12 years	19	58				
2. Gender						
a. Male	38	18	25.71	1	3.841	S*
b. Female	14	50				
3. Education status						
a. 5th standard	31	5	56.84	2	5.991	S*
b. 6th standard	11	9				
c. 7th standard	10	54				
4. Religion						
a. Hindu	43	59	2.40	3	7.815	NS
b. Christian	3	0				
c. Muslim	3	5				
d. Other	3	4				
5. Type of family						
a. Joint	31	50	2.82	1	3.841	NS
b. Nuclear	21	18				

6. Mother's education level						
a. No formal education	4	5	2.65	3	7.815	NS
b. Primary education	8	5				
c. High school education	18	31				
d. PUC & above	22	27				
7. Father's education level						
a. No formal education	6	6	1.6	3	7.815	NS
b. Primary education	13	14				
c. High school education	18	21				
d. PUC & above	15	27				
8. Parent's monthly income						
a. Below Rs.10,000	25	25	8.09	3	7.815	S*
b. Rs.11,000-20,000	9	28				
c. Rs.21,000-30,000	8	6				
d. Rs.31,000 and above	9	9				
9. Type of diet						
a. Vegetarian	13	6	5.76	1	3.841	S*
b. Mixed	39	62				
10.Previous information						
Yes	16	4	9.02	1	3.841	S*
No	36	64				
11.Source of information						
Television	4	6	0.2	4	9.48	NS
You tube/ social media	5	5				
12.Father's occupation						
Health personnel	1	2	0.92	3	7.815	NS
Teacher	5	8				
Agriculture	22	27				
Any other specify	24	31				
13.Mother's occupation						
Health personnel	7	3	6.55	3	7.815	NS
Teacher	2	10				
Agriculture	16	18				
Any other specify	27	37				

NS= not significant. ***S**= Significant at 5% level ($p<0.05$ level),
$\chi2(1)= 30.61$, $\chi2(2)= 25.71$, $\chi2(3)= 56.84$, $\chi2(4)= 2.40$, $\chi2(5)= 2.82$, $\chi2(6)= 2.65$, $\chi2(7)= 1.6$, $\chi2(8)= 8.09$, $\chi2(9)= 5.76$, $\chi2(10)= 9.02$, $\chi2(11)= 0.2$, $\chi2(12)= 0.92$, $\chi2(13)= 6.55$.

Testing of hypothesis
In order to evaluate the association between pre-test knowledge regarding 5 F's of disease transmission among school going children with their selected demographic variables the following research hypothesis was formulated.

Research hypothesis 2
H2- There will be significant association between pre-test knowledge scores with selected demographic variables.
Null hypothesis-2
H_o2- There is no significant association between pre-test knowledge scores with selected demographic variables.

It was evident that there was a statistically significant association between the pre test and post test knowledge score with demographic variables such as Age, gender, education status, religion, source of information, income, type of diet and previous information. It means that there is a significant association between the knowledge score of the school going children with selected demographic variable. Hence the hypothesis H_2 is accepted.

DISCUSSION

A result of the current study revealed that there was inadequate knowledge about 5 F's of disease transmission among school children, with a pretest mean score of 9.8±3.244 However, after the intervention their knowledge improved significantly, with a posttest mean score of 22.24± 3.01 and 't 'value of 2.867 and 't' table value at 0.05 level of significance at df_{119} is 2. Hence 't' calculated value is not less than' t' tabulated value hence we are accepting research hypothesis H_1. The evidence suggests that a

substantial improvement in their understanding of prevention of 5 F's of disease transmission.

The results of chi square value 30.61, 25.71, 56.84, 8.09, 5.76 and 9.02 with respect df2, df1, df2, df3, df1 and df1 of computed between the knowledge level of school going children and selected demographic variables. Variables such as age, gender, education status, income status, type of diet and previous information were significant at 0.05 level of significance .Hence research hypothesis (H2) was accepted, that there is significant association between the pre-test knowledge regarding 5 F's of disease transmission among school going children with their selected demographic variables.

Dr. M. Shreelatha, Mrs. G.H Sreevani, and Dr. P. Sudha Rani's 2019 study provides evidence of the effectiveness of a video-assisted education program on the five F's of disease transmission among students in a few Tirupati schools. A one-group pre-test post-test design was employed in the pre-experiment. 60 students between the ages of 11 and 16 were selected from Tirupathi's government high schools using the convenient sampling approach. Pre and post-test data were gathered using a self-administered questionnaire. Before the post-teat, a 40 minute video-assisted instruction program was used, and over half of sample 35(58.30%) had inadequate knowledge, in contrast, none of them had inadequate knowledge on the post-test, with 48(80%) of the sample having appropriate knowledge and only 12 (20%) having moderate understanding.

CONCLUSION

The study's conclusion have significant ramification for the avoidance of the five F's of disease transmission, indicating that school-age children information retention can be enhanced by customized programs that address particular issues, interactive learning, and demographic considerations. Understanding the elements that contributed to the study's success will help us enhance the 5 F's of disease transmission prevention programs, which will benefit school-age children's health.

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Date: 25.08.2021

ETHICAL CLEARANCE CERTIFICATE

We are hereby granting permission to **Mr. Nikil J V**, studying in 1st year Master of Science in nursing course, Community health nursing department at Adichunchanagiri College of Nursing, B.G Nagara & has selected the following topic for her/his research project to be submitted to the Adicunchanagiri University for the partial fulfillment of Master of Nursing degree.

Statement of research study: A study to evaluate the effectiveness of structured teaching program on knowledge regarding 5 F's of disease transmission among selected school going children at Nagamangala Tq, Mandya Dist.

Further She/he is informed about the following:

1. She/he should not disturb the routine activities of study subjects/setting
2. She/he should not harm the study subjects during the course of study/data collection.
3. Informed consent should be obtained from the study subjects
4. She/he should maintain the confidentiality and anonymity of the subjects and information

MEMBERS OF THE COMMITTEE

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01	Prof. Chandrashekar H C	Principal, ACN	
02	Prof. Komala H K	Professor, Dept. of CHN	
03	Mr. P G N Swamy	Assoc. Prof, Dept. of Community health nursing, Co-guide	
04	Mrs. Veena N H	Lecturer, Biostatistician, Dept. of Community medicine, AIMS	
05	Mrs. Haseen Taj	Sociologist, Psychologist	

PRINCIPAL

B.G. Nagara - 571 448, NH-75, Nagamangala Taluk, Mandya District, Karnataka, India
Ph.: 08234-287868 | Email: acn@acu.edu.in | Website: www.acnain.in