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A study to assess the effectiveness of Structural Teaching Program on Knowledge and Attitude of Nurses regarding Fecal Microbial Therapy (FMT) in selected hospitals of Pune city.

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Abstract

The rapidly emergent field of microbial research, i.e. studies of the diverse microbial communities, their genomes and interactions within and on the human host, has increased our vision for the impact of microbial community composition and function on a variety of human diseases ranging from metabolic to organ dysfunction. Recent advances in sequencing methods have revealed that the gut microbiota have an important role to play in health and disease. The most novel discovery identified regarding use of fecal microbiota transplantation (FMT) as an "ecological" therapy for several gut diseases

Present study has done on 50 samples selected randomly in hospital of Pune city. The population consists of staff nurses who are working with Medical and Surgical department in tertiary care hospital. The sample were selected by using random sampling. Pretest was given to all 50 participants followed by planned teaching program on Fecal Microbial Therapy (FMT). After a period of 2 week, post-test was given to same participants and results. The group were undergone pre-test and Effectiveness of teaching plan on Fecal Microbial Therapy (FMT) was determined by using T-Test (post-test comparison). Chi-square test was used to determine the association between socio-demographical variables and poste test score.

Results showed that, out of 50 subjects, 80% were female and 20% were male. Majority of subjects (84%) were in age group of 25 to 30 and 16% were in age group of above 40 years. Even the selected hospital has NABH accreditation but none of any staff has received in service education related to medication error. Independent T-Test results showed that there is significant difference between the pre and post test score ($p < .005$).

Key words: Fecal Microbial Therapy (FMT)

Introduction

Human beings are one of God's marvelous creations on this earth. The anatomy and physiology of internal structure of human body is another most remarkable and incomparable display of His unbeatable creativity.

Most of the ailments in human body can be cured by use of dietary substances but the gastrointestinal tract, which harbours a large microbial ecosystem, housing several trillion microbial cells named the gut microbiota, is vulnerable to many disease conditions. To name a few of these gut disorders, are Inflammatory Bowel Diseases, Ulcerative colitis etc.
Recent advances in sequencing methods have revealed that the gut microbiota have an important role to play in health and disease. The most novel discovery identified regarding use of fecal microbiota transplantation (FMT) as an "ecological" therapy for several gut diseases has brought in diverse acceptance of the therapy in view of not only its medical value but also the aesthetic perception, understanding and acceptance[(1)].

Recent attempts made in this field suggest that FMT could be an ideal treatment option for a disturbance in the gut microbiota which could be responsible for the initiation and persistence of symptoms in patients with irritable bowel syndrome [(2)].

Fecal Microbiota Transplantation (FMT) is presently an under-researched procedure that could probably be a viable alternative to the current treatment standards for chronic diseases of the intestines (CDI). FMT is a procedure whereby fecal matter obtained from a healthy donor is administered to an individual suffering from CDI, as an end-goal/ last option of correcting the imbalance of gut microbiota[(3)].

The process of stool transfer from healthy donors to the sick is not really a novel attempt but has an ancient history attached to its discovery [(1)]. However, only recently researchers started investigating its applications in an evidence-based manner. Although Researchers have studied the effects of FMT on various gastrointestinal and non-gastrointestinal diseases, but could not precisely pinpoint the exact strain of bacteria which could be responsible for the observed clinical improvement of the process. Results from clinical studies are conflicting, which reflect the gap in knowledge of the microbiome composition and function, and highlights the need for a more defined and personalized microbial isolation and transfer [(4)].
Being a part of the health team, the nurses have an equal responsibility to get abreast with the knowledge regarding this upcoming therapy for the specific gut disorders. But what is most demanding in this therapy is the knowledge and attitude towards the treatment modality, ability to inform the client and his relatives in a convincing manner regarding the advantage of the therapy and seek their consensus for the same.

The history of fecal microbiota transplantation (FMT) dates back even to ancient China[4]. Recently, scientific studies have been looking into FMT as a promising treatment of various diseases, while in the process teaching us about the interaction between the human host and its resident microbial communities.

In modern medicine, the use of fecal enemas for the treatment of 'pseudomembranous colitis' was first reported in 1985 by the surgeon Eiseman. Over the last three decades, faecal transplant has received increased scrutiny after numerous studies proved that stool is a biologically active complex mixture of living organisms with therapeutic potential, and the intestinal microbiota was recognised as the biologically active component of stool [5].https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4873946/ - R6 Thus, the process of stool transfer from a healthy donor to a person suffering from physical illness or symptoms is now termed faecal microbiota transplant (FMT).

Objective:

1. To assess the pretest knowledge regarding FMT among the staff nurses of selected hospitals of Pune city.
2. To assess the effectiveness of structural teaching program on FMT among the staff nurses of selected hospitals of Pune city.
3. To assess the association between selected sociodemographical variables with post test score.

Hypothesis

H_0: There is no difference in pre-test and post-test score after implementing structural teaching program regarding Fecal Microbial Therapy (FMT).

Methodology:

Research Approach: Pre-Experimental

Research Design: One group Pretest post-test design

Variables: Structural teaching program **(Independendant variable),** Knowledge and attitude **(Dependent variables).**

Target population: Staff Nurses working in secondary and tertiary care hospitals

Assessable population: Staff Nurses of Sahyadhri Hospital

Sample size: 50

Inclusive criteria:

1. Staff nurses with B.Sc., P.BSc and M.Sc. Nursing
2. Staff nurses who have able to understand English and Hindi
3. Staff nurses who give consent to participate in study

Exclusion criteria:

1. Staff nurses who have attended in service education on FMT

Sampling technique: Judgmental sampling

Tool:

Section I: Sociodemographical data

Section II: Knowledge based Structure Questionnaire

Section III: Likert scale for attitude assessment

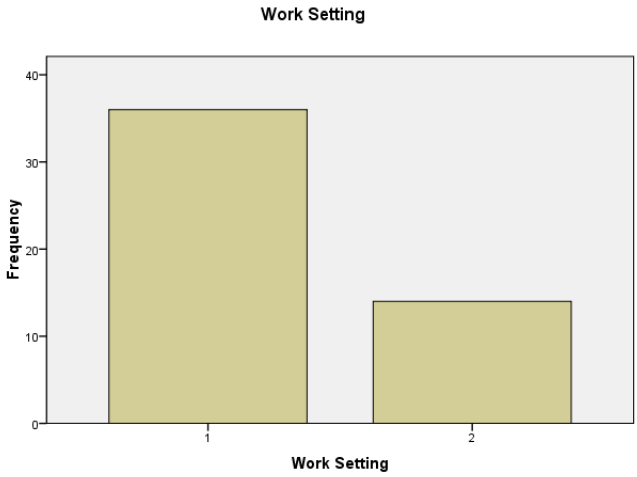
Results and Finding

Statistics							
		GENDER	EDUCATION	WORK SETTING	WORK EXPERIENCE	PREVIOUS KNOWLEDGE	HAVE YOU EVER ENCOUNTER ANY CASE OF FMT
N	Valid	50	50	50	50	50	50
	Missing	0	0	0	0	0	0
Mean		1.280	1.780	1.000	2.700	1.120	1.000
Median		1.000	2.000	1.000	3.000	1.000	1.000
Std. Deviation		.4536	.4185	.0000	.8864	.3283	.0000

Table 1: Table 2 represents the overall demographical data of the study

Work Setting					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	General ward (1)	36	72.0	72.0	72.0
	Infection Control (2)	14	28.0	28.0	100.0
	Total	50	100.0	100.0	

Table 2: Table 1 depicts the work settings of staff nurses. Majority of staff were working in general ward (72%) and only 28% staff were working in infection control even they still participate in study.



FMT case done					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**No (2)**	44	88.0	88.0	88.0
	Yes (1)	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Table 3: Table 2 depicts the numbers of FMT cases assisted by staff. Majority of staff (88%) did not seen or assist FMT cases but 12% staff have assisted the FMT cases. This indicates the FMT procedure is very uncommon to health care settings that so this study aims to explore The FMT to health care professional.

Pre-test and post test

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pre test	78.335	49	.000	35.6000	34.687	36.513
Post test	152.622	49	.000	39.8800	39.355	40.405

Table 4: Shows the Mean knowledge difference between pre and post-test with df, 49 and at 5% level of significance, the results shown to be rejection of Null **(H_0)** hypothesis as p> .05.

So the teaching plan was effective to increase the level of knowledge of staff nurses regarding FMT.

Attitude score

Statistics								
		Not comfortable in handling FMT cases	**Unappealing to handle fecal material of donor**	**Difficult to handle the odor of treatment**	**Unappealing to look for stool donor**	**It look awkward to discuss the FMT with donor**	**Yuck factor is associated with FMT**	**It is embrace to handle the FMT procedure**
N	Valid	50	50	50	50	50	50	50
	Missing	0	0	0	0	0	0	0
Mean		.22	.38	2.28	3.48	4.12	4.94	2.54
Median		.00	.00	2.00	3.00	4.00	5.00	3.00
Std. Deviation		.418	.490	.784	.953	.773	.240	.646

Table 5: Table 5 shows the overall frequency distribution of Attitude score of staff nurse regarding FMT procedure.

Difficult to handle the odour of treatment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Agree**	10	20.0	20.0	20.0
	Strongly agree	16	32.0	32.0	52.0
	Disagree	24	48.0	48.0	100.0
	Total	50	100.0	100.0	

Table 6: Table 6, depicts that 20% staff felt agree in Difficulty in handling the odour of treatment, 32% felt strongly agree in same and majority (48%) disagree that the handling FMT treatment is not a big deal for them.

Unappealing to look for stool donor					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	8	16.0	16.0	16.0
	Disagree	18	36.0	36.0	52.0
	Strongly disagree	16	32.0	32.0	84.0
	Can't say	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

Table 7: Table 7, depicts the attitude of staff nurses on look and aesthetics of donor's stool. Majority (36%) staff felt disagree when asked about the unappealing to look for donor. (32%) were strongly disagree for the same and only 16% were strongly agree that it bothers them to look for stool donor.

It look awkward to discuss the FMT with donor					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	2.0	2.0	2.0
	Strongly agree	1	2.0	2.0	4.0
	Disagree	3	6.0	6.0	10.0
	Strongly disagree	31	62.0	62.0	72.0
	Can't say	14	28.0	28.0	100.0
	Total	50	100.0	100.0	

Table 8: Table 8 depicts the attitude of staff nurse for awkward factors for FMT. Majority of staff (62%) were strongly disagree that it look awkward to discuss the FMT with donor and only 2% were in favor of this.

It is embrace to handle the FMT procedure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	2	4.0	4.0	4.0
	Strongly agree	21	42.0	42.0	46.0
	Disagree	25	50.0	50.0	96.0
	Strongly disagree	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Table 9: Table 9 depicts the attitude of staff regarding the handling of FMT cases.

Majority of staff (50%) were disagree that it embrace to handle the FMT cases. 42% were strongly agree that it is embrace for them to handle the FMT cases

Conclusion:

Despite increasing interest in fecal microbial therapy (FMT), its full therapeutic potential has yet to be determined. Since its increase in popularity, FMT has been shown to be highly effective in the treatment of both *Clostridium difficile* infection (CDI). The training and education to health care professionals regarding FMT is very essentials. The study over all showed that rejection of Null **(H_0)** hypothesis as $p > .05$. So the teaching plan was effective to increase the level of knowledge of staff nurses regarding FMT.

In term of attitude towards FMT, 20% staff felt agree in Difficulty in handling the odour of treatment, 32% felt strongly agree in same and majority (48%) disagree that the handling FMT treatment is not a big deal for them. the attitude of staff nurses on look and aesthetics of donor's stool. Majority (36%) staff felt disagree when asked about the unappealing to look for donor. (32%) were strongly disagree for the same and only 16% were strongly agree that it bothers them to look for stool donor.

Conflict of Interest: In the present study there was no conflict of interest among the health care professional and researcher.

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Ethical clearance: The Ethical clearance was taken from SCON Institutional Research Committee (IRC) on January, 2019

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