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A Study To Assess The Knowledge Regarding Complications And Its Management In Liver Transplantation Patients Among Staff Nurses In Selected Hospital, New Delhi.

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Abstract: Liver transplantation is a high-risk surgical procedure typically performed as a last resort to save patients' lives. The risk of complications arising from liver transplantation begins immediately after surgery and can persist for years thereafter. Rejection is the most serious and ongoing complication, which can potentially lead to the patient's death. This study aimed to assess the knowledge of staff nurses regarding complications and their management in liver transplantation patients and to determine the association between the knowledge levels with their selected demographic variables. To achieve this objective, a descriptive survey design was employed. A convenience sampling method was used to recruit 30 staff nurses, who participated in the study by completing a self-developed knowledge questionnaire. The data collected were subsequently analyzed using descriptive and inferential statistical methods. The pre-test results revealed that 20% of the staff nurses possessed adequate knowledge, while 36.66% demonstrated a moderate level of knowledge, and 43.33% exhibited low knowledge levels. The study concluded that the staff nurses' knowledge scores were inadequate, highlighting the need for further research to investigate the variables and determinants influencing their perceptions. This would facilitate a deeper understanding of the theoretical and practical aspects of transplantation and aftercare.

Index Terms - Liver Transplantation, Rejection, Immune suppressants, Graft loss, Donor Organ

I. INTRODUCTION

Liver transplantation is a high-risk surgical procedure typically performed as a last resort to save patients' lives. The term "transplantation" is derived from the Latin word "transplantare," meaning "to plant across" or "to plant again in a different place." This procedure involves removing a diseased or injured liver from one individual and replacing it with a whole or partial healthy liver obtained from another person, known as the donor. Notably, the liver is the only organ in the human body capable of regeneration, or growth. Consequently, a transplanted segment of a liver can regenerate and grow to normal size within a relatively short period, typically a few months. Transplanted livers are often obtained from individuals who were registered donors and have passed away. However, due to the liver's remarkable regenerative ability, it is also possible for a living person to donate a portion of their liver to someone in need of a transplant.

A liver transplant is recommended when a person's liver no longer functions adequately enough to sustain their life. A successful liver transplant is a life-saving procedure for individuals with liver failure. Liver failure can occur suddenly, referred to as acute liver failure, as a result of infection or complications from certain medications. Alternatively, liver failure can result from a long-term problem, known as chronic liver failure, which progresses over months, years, or decades. The most common technique employed is orthotopic transplantation, in which the native liver is removed and replaced by the donor organ in the same

anatomic position as the original liver. The surgical procedure is complex, requiring careful harvesting of the donor organ and meticulous implantation into the recipient. Liver transplantation is highly regulated, and only performed at designated transplant medical centers by highly trained transplant physicians and supporting medical teams.[1] According to a study, individuals who undergo liver transplantation have an 89% chance of survival after one year, with a five-year survival rate of 75%. One of the major challenges facing the transplant community is the increasing incidence of metabolic complications, which now affect quality of life and long-term survival. Therefore, knowledge of complications that emerge during the follow-up period, early and accurate establishment of diagnosis, and prompt institution of appropriate interventions are essential for optimal patient and graft outcomes. Because several possible complications occur more frequently in the immediate post-transplant period, transplant centers require patients to remain nearby to allow for frequent monitoring and prompt treatment of these events.[2]

A liver transplant is a complex process comprising hundreds of steps. Although numerous possible complications can arise, most are relatively rare. One reason patients undergo extensive testing before surgery is to decrease the potential risks of heart attack, stroke, or death. Despite these tests, it is essential to be aware that these complications can still occur. Complications can occur both immediately post-transplantation and in the long term. The primary complications in the immediate postoperative period are related to graft function, surgical technique, infections, and systemic problems. In the long term, complications typically result from prolonged immunosuppressive therapy and include diabetes mellitus, systemic arterial hypertension, de novo neoplasia, and organ toxicities. Approximately two-thirds of liver transplant patients experience some level of rejection. If severe enough, re-transplantation is required. Because the liver filters toxins and waste from the blood, if the organ fails to function properly, a person can become seriously ill. The immune suppressants used to lower rejection chances put patients at higher risk of developing infections, which are considered among the most common liver transplant complications. Individuals with other health conditions, such as AIDS, or those who have recently undergone chemotherapy or another organ transplant, are most susceptible to post-surgical infections. Infection risk declines gradually over time after surgery as the body adjusts to the new liver. [3]

During any organ transplant, there is always a risk that the patient's body might reject the new organ. Major bleeding post-surgery is another common complication. The new liver must quickly produce proteins to clot blood; if not, bleeding remains a likely complication. Sometimes bleeding can be controlled through transfusions to replace lost blood. Internal bleeding post-transplant is often corrected with follow-up operations. Conversely, some patients experience clotting problems. The vessels that supply blood to the liver may clot following surgery, putting the organ and the patient's life at risk. Patients are monitored daily with ultrasounds for several days after surgery to detect any clotting. A follow-up surgery is usually required to remove clots.[4]

According to **Dal Sasso-Mendes et al. (2009),** patient education on nursing care is crucial, and the educational process begins as soon as the patient becomes a potential candidate for a transplant. The issues discussed during this process vary and include the surgical procedure, treatment follow-up, and possible adverse effects of the transplant. This information aims to improve the patient's quality of life and promote longevity. [5]

Franco et al. examined the educational needs of transplant patients and described the education process evolution. The authors reported on the educational process evolution of patients undergoing organ transplantation and the implementation of a cooperative care model. An education strategy involving ongoing provision and regular reinforcement of information, from pre-transplant to discharge, prepared patients and their families to face the challenges of liver transplant. As time passes, the risk of liver transplants complication drops somewhat. Bleeding, clotting, and infection issues decline over time, but rejection remains an ongoing issue.[6]

Most complications appear in the immediate post-operative period, which can be resolved by a nurse with adequate knowledge regarding the same. The education of liver transplantation patients is a nursing responsibility that aims to make recovery easier, minimize post-operative complications, and is an essential step for a successful transplant. The complexity and comprehensive nature of the transplantation procedure require consistent provision of information. Moreover, the search for strategies to encourage acceptance of

behavioral modifications and their practice is an ongoing challenge for nurses responsible for caring for liver transplantation patients.

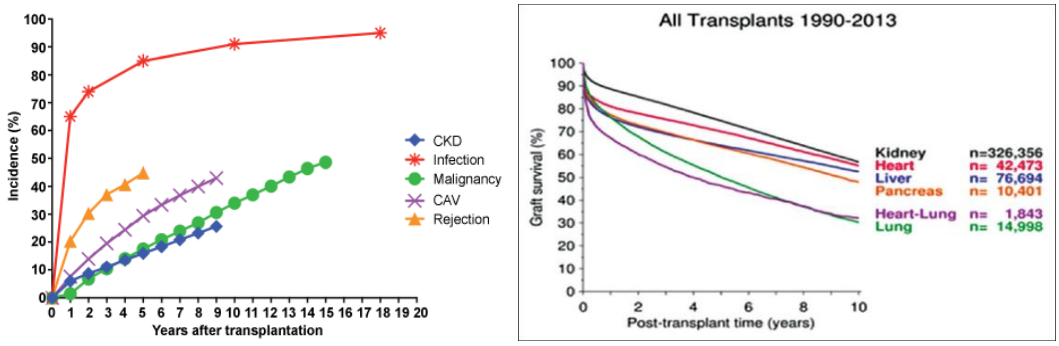

Fig. 1: Graph showing transplantation incidence rate and the percentage of post transplant graft.

II. OBJECTIVES

- To assess the existing knowledge of staff nurses regarding the complications and its management in liver transplantation patients.
- To determine the association between the knowledge of complications and its management of liver transplantation among study subjects with their selected demographic variables.

III. CONCEPTUAL FRAMEWORK

In the present study these concepts can be explained as follows:

Input:

The Input consists of characteristics and conditions of people and the resources. In this study input refers to the age of staff nurses, their professional educational level and the years of clinical experiences.

Throughput:

It refers to the procedure of the programme. It includes assessment of the existing knowledge regarding complications and its management of liver transplantation. The assessment of knowledge is essential because the cognitive process have their own motivational or dynamics force which forms, attitude and directs behaviour.

Output:

After processing through assessment the systems output in form of behaviour, directing with acquired knowledge and attitude. If there is adequate knowledge, it leads to positive attitude. Inadequate knowledge leads to negative attitude.

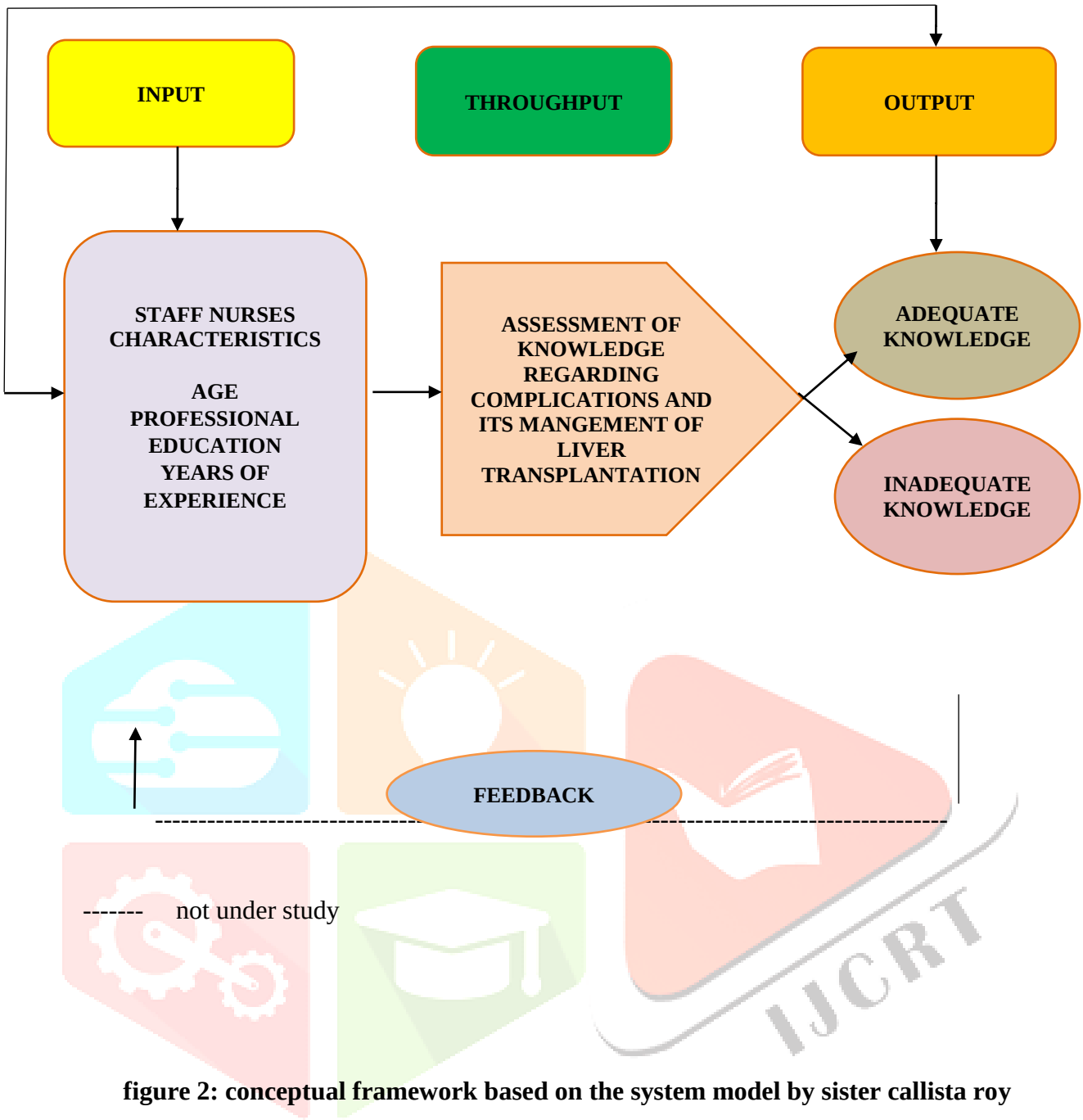

figure 2: conceptual framework based on the system model by sister callista roy

IV. MATERIALS AND METHODS

4.1. Aims

The aim of this study was to assess the existing knowledge of staff nurses regarding the complications and its
management in liver transplantation patients and to determine the association between the knowledge of complications and its management of liver transplantation among study subjects with their selected demographic variables. The research hypotheses and null hypothesis were tested:

- **H1:** There will be significant association between the knowledge scores of staff nurses with selected demographic variables.
- **H0:** There will be no significant association between the knowledge scores of staff nurses with selected demographic variables.

4.2. Design

The Descriptive survey design was used in this study as it is suitable to assess the knowledge of staff nurses regarding the complications and its management in liver transplantation patients and to determine the association between the knowledge of complications and its management of liver transplantation with their selected demographic variables.

4.3. Participants

Participants consisted of 30 staff nurses working in Liver Transplant unit using convenient sampling technique. We recruited study participants from a private hospital in Delhi. Inclusion criteria were: (1) who are willing to participate in the study. (2) who are available during data collection procedure. Exclusion criteria included: (1) who are absent during the study period. (2) who are not willing to participate in the study.

4.4. Data collection

After obtaining the ethical permission from the ethical committee of the selected hospital, New Delhi, the study was conducted on 30 staff nurses. The samples were selected using convenient sampling technique. Self-introduction was given and purpose of the study was explained to staff nurses. Confidentiality of their response was assured. Formal informed consent was obtained from the sample who met the inclusion criteria. The data is collected through structured questionnaire on complications and its management of liver transplantation. All subjects were also asked to complete a demographic data sheet attached with the pre-test questionnaire. The data sheet included age, professional education and years of experience. Analysis of data was done by using descriptive and inferential statistics.

4.5. Data analysis

Descriptive and inferential statistics were used for analysis**. Bar graphs, Cone graph, Donut graph, cylindrical graph and pie charts were used for describing sample characteristics, mean scores and comparison of the data. The chi- square test along with Yates** correction was calculated to determine the association between the knowledge scores and the selected demographic variables.

V. RESULTS AND DISCUSSION

The obtained data and findings will be organized and presented under the following sections:
Section I: Findings related to demographic characteristics of Staff Nurses.
Regarding age, majority of subjects 17 (56.66%) were in the age group of 30-40 years. 11 (36.66%) were in the age group of 20-30 years. 2 (6.66%) were in the age group of > 40years. Regarding professional education out of 30 subjects 17 (56.66%) were GNM. 7 (23.33%) were post basic nursing. 5 (16.66%)were graduate (Bsc). 1 (3.33) was post graduate(MSC nursing). Regarding Years of experience out of 30 subjects 5- 10years experience 14(46.66%), 1 to 5 years experience 4(13.33%), >10 years experience 12 (40%).

Table no 1: shows demographic characteristics of staff nurses.

SL.NO	DEMOGRAPHIC VARIABLES	STAFF NURSES	
		Frequency (n)	Percentage (%)
1.	AGE IN YEARS		
	A. 20- 30 YEARS	11	36.66
	B. 30- 40 YEARS	17	56.66
	C. >40 YEARS	2	6.66
2.	PROFESSIONAL EDUCATION		
	A. GNM	17	56.66
	B. BSC. NURSING	5	16.66
	C. POST. BSC	7	23.33
	D. MSC NURSING	1	3.33
3.	YEARS OF EXPERIENCES		
	A. 1- 5 YEARS	4	13.33
	B. 5- 10 YEARS	14	46.66
	C. >10 YEARS	12	40

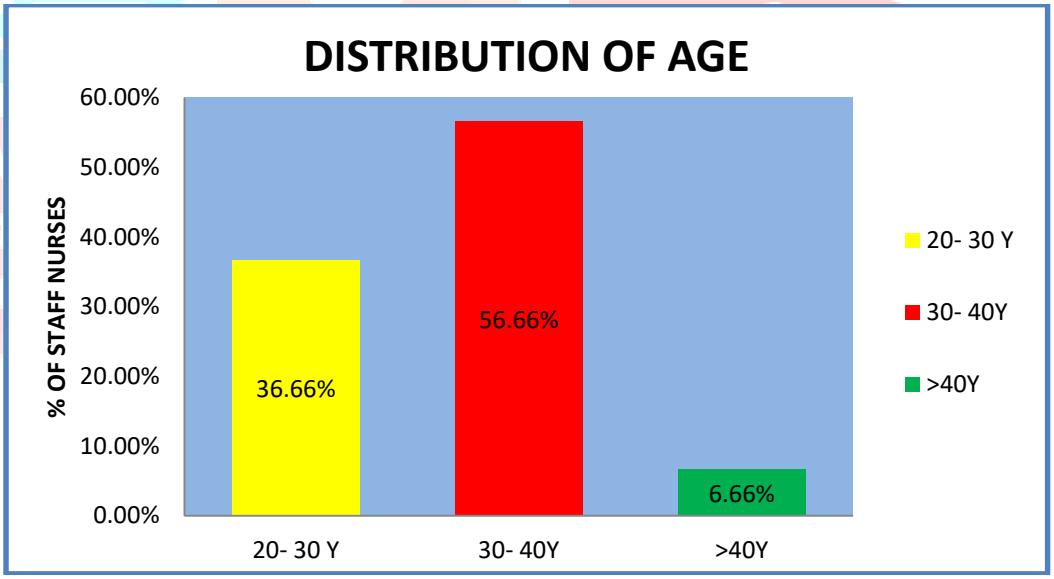

fig. 3: bar diagram showing frequency and percentage distribution of staff nurses regarding age

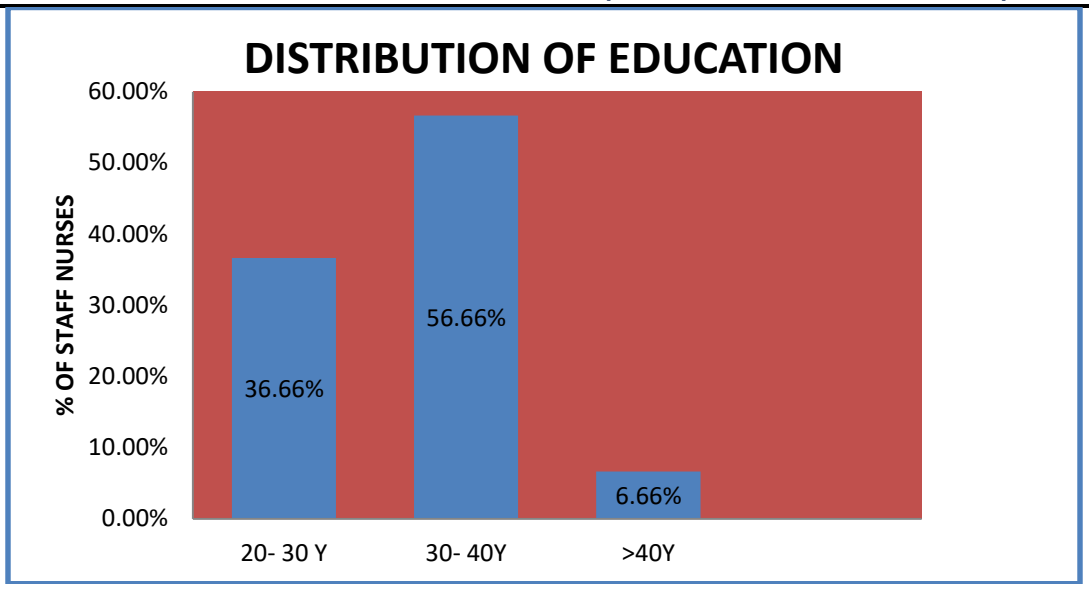

fig. 4: bar diagram showing frequency and percentage distribution of staff nurses regarding their professional education.

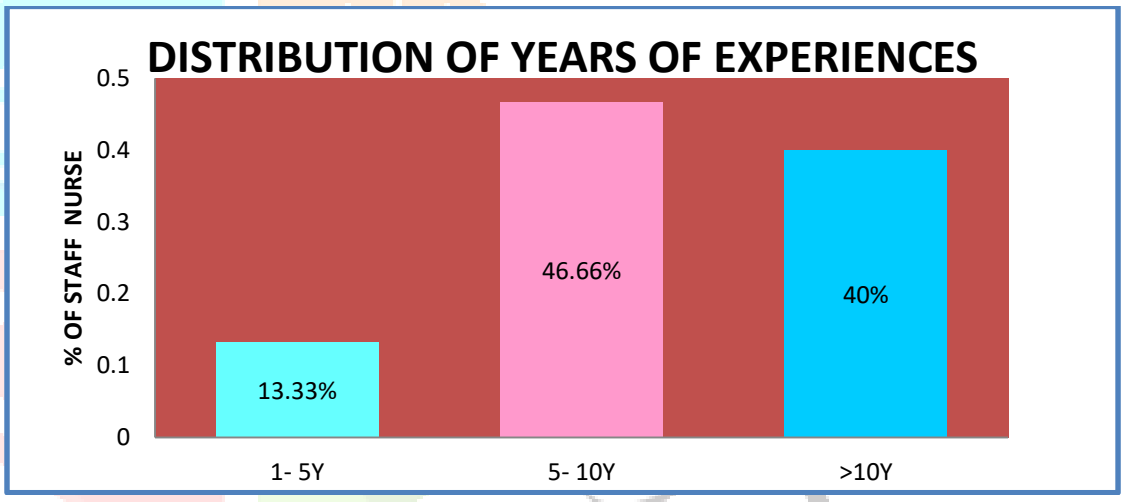

fig. 5: bar diagram showing frequency and percentage distribution of staff nurses regarding years of experience.

Section II: Findings related to the level of knowledge regarding complications and its management in liver transplantation patients among staff nurses.

Frequency and percentage distribution on knowledge regarding complication and management of liver transplantation patients among staff nurses in test 20% of them had good knowledge and 36.6% of them had average level of knowledge and 43.3% of them had poor level of knowledge.

Table no 2: shows level of knowledge regarding complications and its management in liver transplantation patients among staff nurses.

S.No	Level of Knowledge	Score Range	Pre- Test	
			Frequency	Percentage
1.	Good Knowledge	14 - 20	6	20%
2.	Average Knowledge	7 - 13	11	36.6%
3.	Poor Knowledge	0- 6	13	43.3%

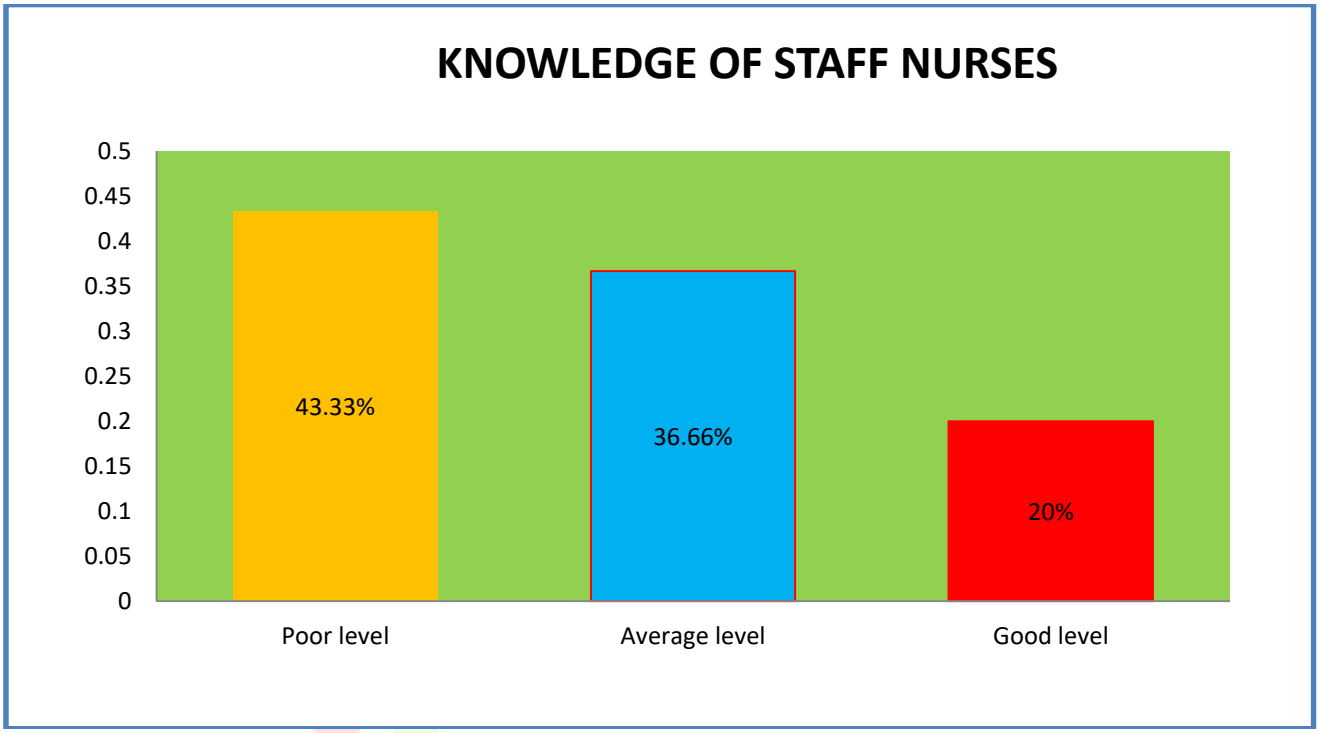

fig. 6: bar diagram indicates the distribution of staff nurses by level of knowledge.

Table 3: mean standard deviation and mean percentage of staff nurses scores of knowledge.

SL.NO	MAX MARKS	TEST		
		MEAN	S.D	MEAN %
1.	25	10.50	3.95	3.33

Section III: Find out the association between test scores of knowledge among staff nurses with their demographic variables.

Chi- square was calculated to find out the association between knowledge scores of staff nurses with their demographic variables (Age, professional education and years of experience). It reveals that there was no significant association found between knowledge scores and selected demographic variables.

table 4 chi-square value of association between the test scores of knowledge among staff nurses with their demographic variables.

S.No	Selected variables	Good Knowledge Frequency (f)	Average Knowledge Frequency (f)	Poor Knowledge Frequency (f)	Chi- Square value	df
1.	**Age in years**					
	20- 30 years	2	4	5		
	31- 40 years	4	7	6	3.098	4
	>41 years	0	0	2		
2.	**Professional Education**					
	GNM	3	5	9		
	BSC N	1	3	2	7.09	6
	POST BSC	1	3	2		
	MSC N	1	0	0		
3.	**Years of experience**					
	0 -5 yrs	1	3	3		
	6- 10yrs	2	8	4	5.69	4
	>10yrs	3	0	6		
		$\chi 2$ (1) = 3.098	$\chi 2$ (2) = 7.09		$\chi 2$ (3) = 5.69	

VI. DISCUSSION:

The present study aimed to assess the knowledge of staff nurses regarding complications and their management in liver transplantation patients and to determine the association between the knowledge levels with their selected demographic variables. The findings of the present study have been discussed in relation to the observation made by other studies which the investigator reviewed. 20% of the staff nurses possessed adequate knowledge, while 36.66% demonstrated a moderate level of knowledge, and 43.33% exhibited low knowledge levels.

The findings of the present study were similar to the study findings of **Karina Dal Sasso Mendes, Orlando de Castro e Silva Junio, et.al (2013)** the study was to analyse candidates' knowledge on the liver transplantation process before and after putting in practice an educational intervention. A quasi-experimental, one-group pre-test –post-test research design was adopted. The final sample included 15 subjects. Research data were collected between January and March 2010 in three phases, which were: pretest, implementation of the educational intervention (two meetings) and post-test. The results evidenced significant cognitive gains after the intervention, with improvements in the participants' performance. The research presents evidence that putting in practice a patient education strategy can enhance candidates' knowledge on the liver transplantation process and consequently contribute to a successful treatment.[5]

VII. CONCLUSION:

The main objective of the study was to assess the knowledge of staff nurses regarding complications and their management in liver transplantation patients and to determine the association between the knowledge levels with their selected demographic variables. Majority of subjects 17 (56.66%) were in the age group of 30-40 years. 11 (36.66%) were in the age group of 20-30 years. 2 (6.66%) were in the age group of > 40years. Regarding professional education out of 30 subjects 17 (56.66%) were GNM. 7 (23.33%) were post basic nursing. 5 (16.66%)were graduate (Bsc). 1 (3.33) was post graduate(MSC nursing). Regarding Years of experience out of 30 subjects 5- 10years experience 14(46.66%), 1 to 5 years experience 4(13.33%), >10 years experience 12 (40%). Chi- square was calculated to find out the association between knowledge scores of staff nurses with their demographic variables (Age, professional education and years of experience). It reveals that there was no significant association found between knowledge scores and selected demographic variables.

VIII. IMPLICATIONS:

The findings of the present study to assess the knowledge of staff nurses regarding complications and their management in liver transplantation patients can have several implications to Nursing Education, Nursing Practice, Nursing Research and Nursing Administration.

Nursing practice

- Nurses have great responsibilities to improve knowledge and attitude towards the prevention and management of post –transplantation complications among health personnels.
- The Community Health Nurses can plan, implement and evaluate various teaching programmes regarding post transplantation complications.

Nursing Education

- The student nurse may be educated to teach the community with the different aspects of knowledge regarding liver transplantation and its post surgical complications.
- There must be adequate lectures and hands- on practice sessions on post liver transplantation complication prevention and management to ensure adequate knowledge and practice skills among the IT students.

Nursing Administration

- Nursing leaders must utilize available resources which are technologically sound in teaching through the mass health education programme.
- Professional interaction between the nurses and the public will help to improve professional standards and creates better image in the community.

Nursing Research

- Nursing research can help gather information about the knowledge level of the staff nurses regarding post liver transplantation complication prevention and management.
- Nursing research can be useful for evaluating different strategies for enhancing the knowledge level.
- Promote more research in innovative areas such as Post Transplantation Health Problem.
- This study will serve as a valuable reference material for future investigators.

IX. LIMITATIONS

The present study was conducted on a limited number of subjects in one setting. Therefore, broad generalization cannot be made.

X. RECOMMENDATIONS

- This study can be conducted on a larger sample size in different hospital settings.
- A quasi-experimental study can be conducted to assess the effectiveness of other teaching modalities on the knowledge of critical care nurses, nursing students and post transplantation patients.
- A similar study can be done to evaluate effectiveness of various other teaching modalities on the knowledge of the staff nurses regarding prevention and management of post transplantation complications.
- Similar study would be replicated to assess the difference in knowledge scores of staff nurses who have attended critical care training programme and those who did not attend any critical care training programme.
- A follow up study can be conducted to assess the knowledge of staff nurses regarding complications and their management in liver transplantation patients on staff nurses.

XI. CONFLICT OF INTEREST:

The authors have no conflicts of interest regarding this investigation**.**

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