



## Knowledge and attitude regarding car t-cell therapy among staff nurses working at a selected tertiary care hospital

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### Abstract

**Backgrounds:** Chimeric antigen receptor (CAR) T-cell therapy is an evolving treatment used for hematologic malignancies; it requires specialized nursing care and knowledge. There are many updates in the nursing management of CAR T-cell therapies and their use in adult patients. Oncology and intensive care unit nurses will need to be knowledgeable about and remain current in the management of patients receiving CAR T-cell therapies because they pose different challenges than seen with traditional chemotherapy regimens.

**Aim:** The main aim of the study was to find out Knowledge and Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital.

**Methods:** In Knowledge results were representing at mean + standard deviation (SD). Participants demographic variables were analyzed. It was measured two demographic variables were significant the test statistical value is measured by Chi Square test was 7.22 with d.f 2 and p value 0.027. In the demographic variable Qualification and 11.47 with d.f 3 and p value 0.009 in the Designation showed significance. In attitude scale it was measured two demographic variables were significant that results were representing at mean + standard deviation (SD). Participants demographic variables were analyzed. the test statistical value is measured by Chi Square test was 5.28 with d.f 1 and p value 0.022. the demographic variable Gender showed significance and second was test statistical value is measured by Chi Square test was 6.51 with d.f 2 and p value 0.039. the demographic variable Qualification showed significance.

**Conclusion:** The finding of the study indicated that the 0(0.00%) Staff Nurses have poor knowledge, 17 (14.17%) Staff Nurses have Average Knowledge, 53 (44.17%) Staff Nurses have good knowledge and 50 (41.67%) Staff Nurses have Excellent knowledge Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital. In attitude assessment study indicated that the 6 (5.00%) Staff Nurses are Unfavorable, 4 (3.33%) Staff Nurses are Neutral and 110 (91.67%) Staff Nurses are Favorable Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital.

**Keywords:** CAR T cells Therapy, knowledge and attitude, nursing staff, tertiary care hospital

### Introduction

CAR T cells are T lymphocyte cells that have been "reprogrammed" to target the antigens on the surface of a cancer cell (such as CD19 or BCMA). The CAR T cells then proceed to attack the cancer cells as if they were an infection [1].

The global burden of cancer, including its incidence and mortality rates, has surged significantly. The International Agency for Research on Cancer estimated 19.97 million new cancer cases and 9.7 million deaths attributed to it worldwide in 2022.1 Cancer mutations provide mechanisms

that enable unchecked growth, prevent programmed cell death, and facilitate evasion of immune detection, among other traits [2].

**Need for study:** Cell therapy is an emerging treatment technology for hematologic cancers. It utilizes genetic engineering knowledge to modify T-cell receptor molecules to bind to specific proteins on the surface of cancer cells, without relying on the expression of genes and proteins on the cancer cell surface. This allows cell therapy to target and kill cancer cells precisely. Nurses play a crucial role in

caring for patients undergoing cell therapy, from the admission process to assessing physical and mental readiness. These patients often endure suffering from multiple chemotherapy and/or radiotherapy regimens, leading to physical decline and anxiety due to previous treatment failures. Fear of disease recurrence or ineffective cell therapy constantly troubles patients. Establishing a relationship between nurses and patients is essential. Listening to patients' thoughts and feelings about the treatment, their past experiences with illness, and assessing their understanding of cell therapy helps nurses gain deep insights into patients [3].

**Statement of problem:** Knowledge and Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital.

### Objectives

1. To assess the knowledge of staff nurses regarding CAR T-cell therapy.
2. To evaluate the attitude of staff nurses toward CAR T-cell therapy.
3. To examine association between knowledge of staff nurses regarding CAR T-cell therapy with demographic variables such as age, experience, and area of work.
4. To examine association between attitude of staff nurses regarding CAR T-cell therapy with demographic variables such as age, experience, and area of work.

### Hypothesis

- **H<sub>0</sub> (Null Hypothesis):** There is no significant association between knowledge/attitude scores and demographic variables.
- **H<sub>1</sub> (Alternative Hypothesis):** There is a significant association between knowledge/attitude scores and demographic variables.

**Primary Research Question:** find out the Knowledge and Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital

### Material and Methods

**Ethical aspect:** Permission to conduct research study was obtained from concerned authority i.e. CO of Tertiary Care Hospital. Written consent was taken from the participant for their willingness to participate in the study. The confidentiality of the data was maintained.

**Sample size:** The sample size of present study was 120 Staff Nurses working in selected Tertiary Care Hospital.

**Sampling selection criteria:** As per eligibility criteria, staff nurses of selected Tertiary Care Hospital were included in the study. The staff nurses of selected Tertiary Care Hospital, who were not willing to participate in this study, who were not present at the time of data collection were excluded from the study.

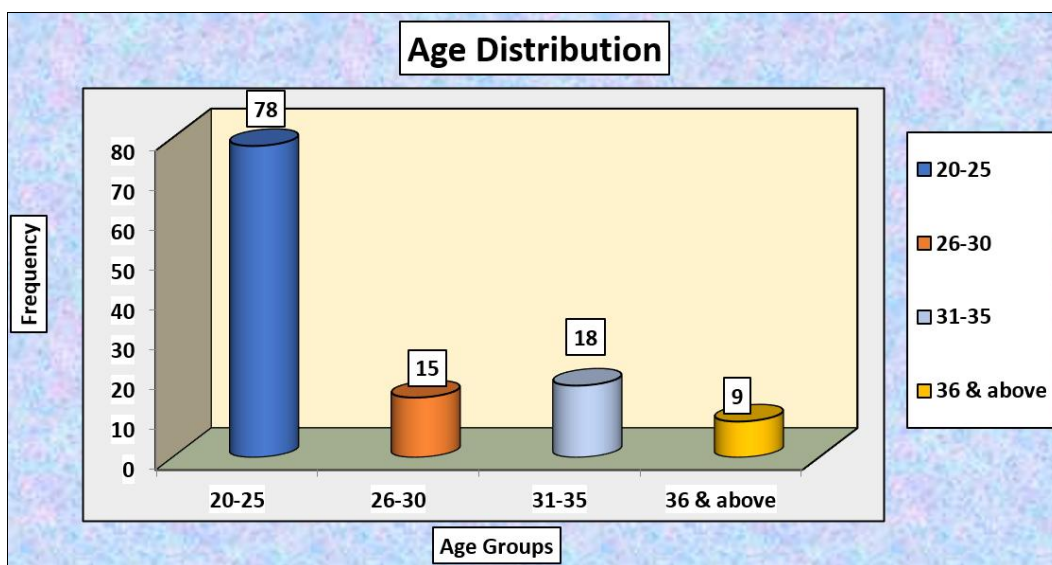
**Study procedure:** After informed consent process, the staff nurses of selected Tertiary Care Hospital were included in the study as per as per the inclusion criteria. After inclusion, the demographic data variables of students of selected Nursing college such as age, Gender, Qualification, Designation, Work experience, Are you have work experience of Cancer department were noted. This assessment day was considered as day 1 of the study. Knowledge assessment questionnaire and 5-point Likert scale for attitude assessment was used as an instrument which consisted of three sections. First section (section A) consisted of 6 items regarding demographic variables, second section (section B) consisted of questionnaire related to Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital and third section (section C) consisted of 5-point Likert scale for attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital. The score of the questionnaire were based on score which given to options. The response was given '1' score to right answer, and '0' score to wrong answer in knowledge assessment and in attitude assessment strongly agree '4', agree '3', neutral '2', disagree '1' and strongly disagree '0'. The finding of the study indicated that the 11(9.17%) students have poor knowledge 77 (64.17%) students have Average Knowledge and 32(26.67%) students have good knowledge Regarding HPV Vaccination Among B.Sc. Nursing Students in Selected Nursing College at Nashik City. In attitude assessment study indicated that the 0(0.00%) students are Unfavorable 47 (39.17%) students are Neutral a and 53(44.17%) students are Favorable Regarding HPV Vaccination Among B.Sc. Nursing Students in Selected Nursing College at Nashik City. In this study construct validity of the tool was established in consultation with expert. Experts were requested to give their opinion and suggestion regarding relevant, not relevant and need to modify in each item of tool. After receiving the opinion and recommendation for change from the expert, and consultation with guide, some modification, were done in demographic variables, opinion of some questions and wording were reconstructed.

### Results

**Table 1:** Section I: Frequency and percentage distribution of socio-demographic variables of Knowledge and Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital. (n=120)

Sr. No.	Variable	Groups	Frequency	Percentage
1	Age	20-25	78	65.00
		26-30	15	12.50
		31-35	18	15.00
		36 & above	9	7.50
2	Gender	Male	33	27.50
		Female	87	72.50
3	Qualification	ANM	0	0.00
		GNM	54	45.00

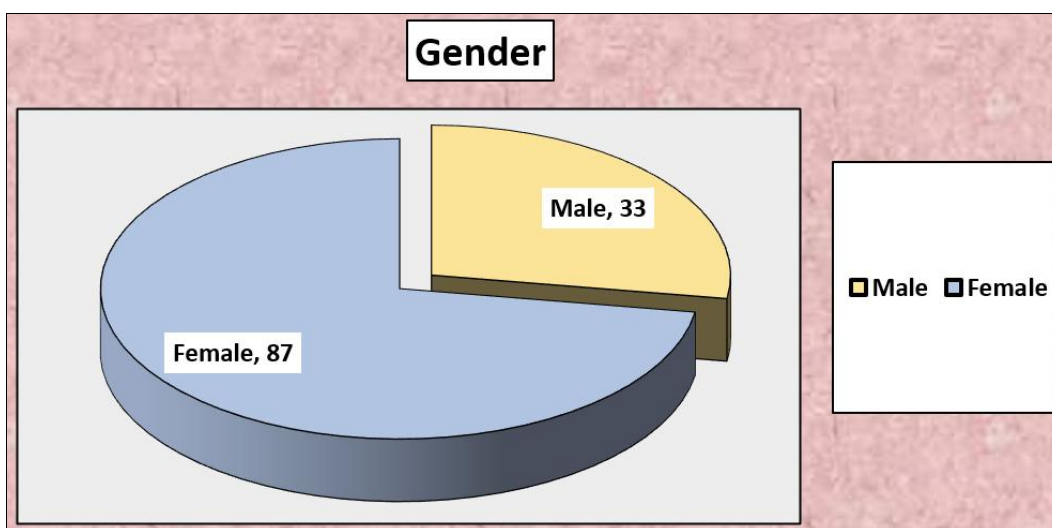
		BSc nursing	59	49.17
		MSc nursing	7	5.83
4	Designation	Staff nurse	84	70.00
		Head nurse	1	0.83
		Incharge nurse	26	21.67
		Nurse Educator	9	7.50
5	Work Experience	less than 1 Year	52	43.33
		2-5 years	44	36.67
		5-10 years	12	10.00
		More than 10 years	12	10.00
6	Are you have work experience of Cancer department	Yes	36	30.00
		No	84	70.00



**Fig 1:** Clustered column in distribution of participants according to Age, n-120

Finding shows the age distribution of the study subject where majority i.e. 78(65.00%) of 20-25 year of age, 15

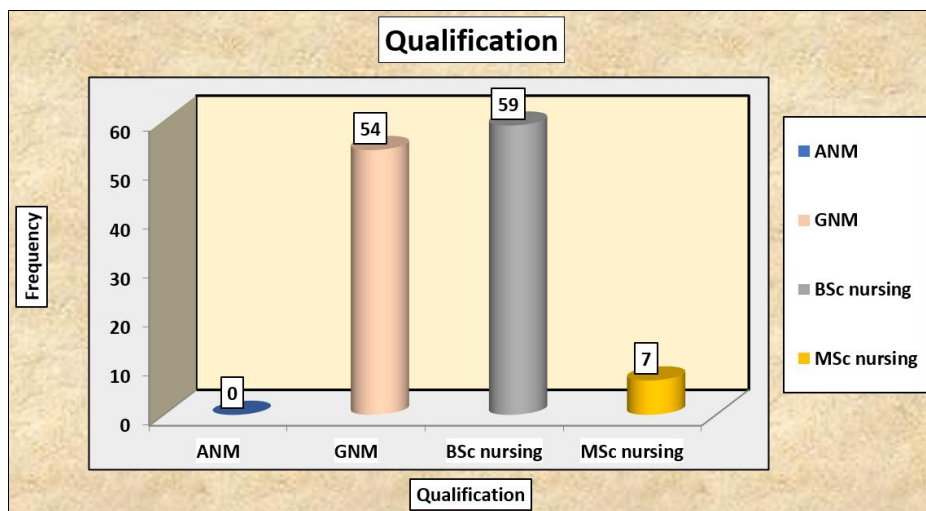
(12.50%) 26-30 years of age, 18 (15.00%) 31-35 years of age, and last 9 (7.50%) in 36 & above.



**Fig 2:** Pie diagram Showing the distribution of participant according to their Gender, n-120

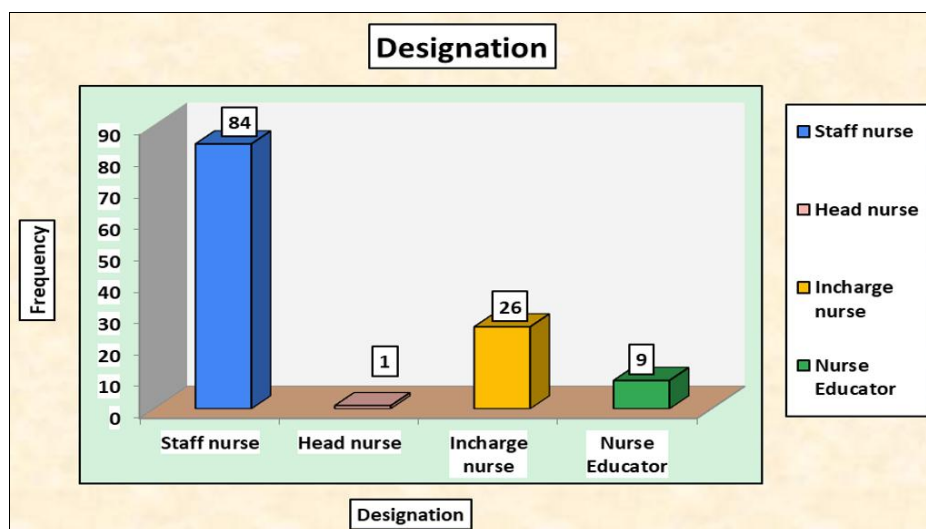
Finding shows the gender distribution of the study subject were 33 (27.50%) participants are Male, 87 (72.50%) Of

participants are Female.



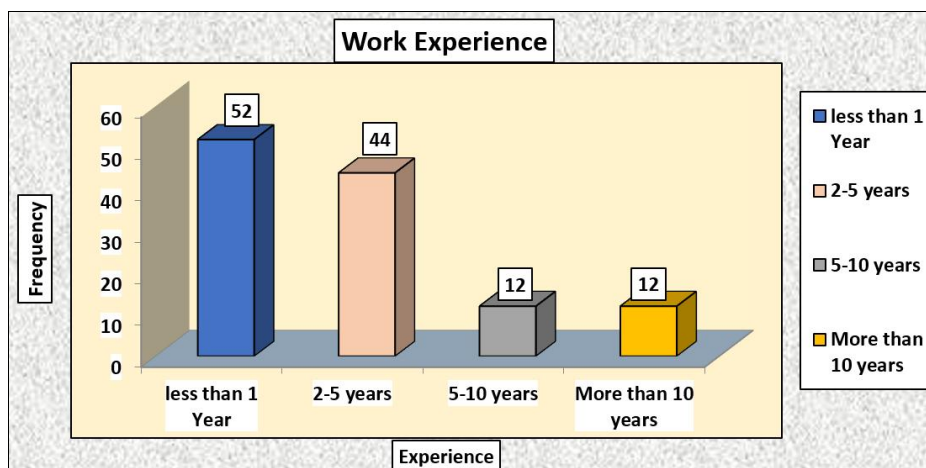
**Fig 3:** Clustered column in distribution of participants according to Qualification

Finding shows the Qualification distribution of the study subject where ANM are 0 (0.00%) participants, GNM are 54 (45.00%) participants, BSc Nursing are 59 (49.17%), MSc Nursing 7 (5.83%).



**Fig 4:** Clustered column in distribution of participants according to Designation, n-120

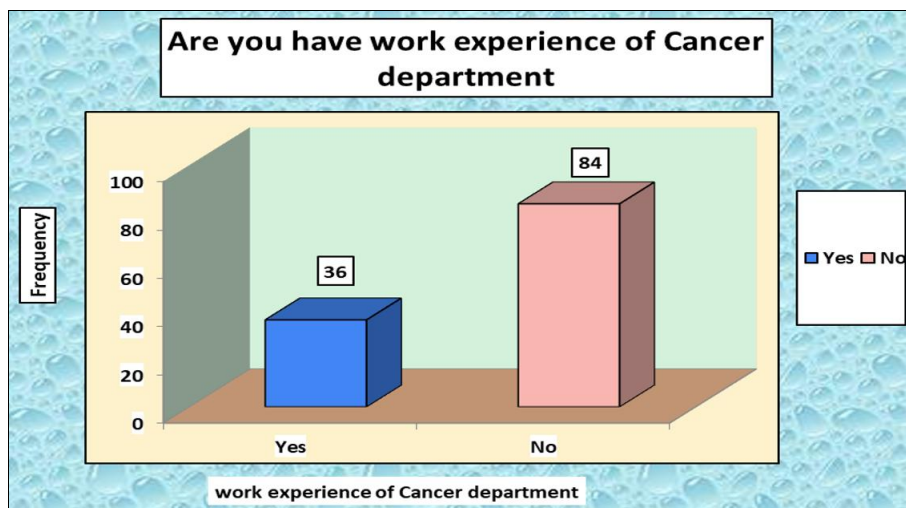
Finding shows the Designation distribution of the study subject where Staff nurse are 84 (70.00%) participants, Head nurse are 1 (0.80%) participants, Incharge nurse are 26 (21.67%), Nurse Educator 9 (7.50%).



**Fig 5:** Clustered column in distribution of participants according to Work Experience, n-120

Finding shows the Designation distribution of the study subject where less than 1 Year are 52 (43.33%) participants,

2-5 year are 44 (36.67%) participants, 5-10 year are 12 (10.00%), More than 10 year 12 (10.00%).



**Fig 6:** Clustered column in distribution of participants according to Are you have work experience of Cancer department, n-120

Finding shows the Are you have work experience of Cancer department distribution of the study subject where yes are

36 (30.00%) participants, No where 84(70.00%).

**Table 2:** The association between Knowledge Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital With selected demographic variables. n-120

Sr. No.	Variable	Groups	Knowledge		Chi Squared	d.f	p value	Significance
			below Md	Above Md				
1	Age	20-25	42	36	2.57	3	0.46	Not Significant
		26-30	11	4				
		31-35	12	6				
		36 & above	5	4				
2	Gender	Male	17	16	0.87	1	0.35	Not Significant
		Female	53	34				
3	Qualification	ANM	0	0	7.22	2	0.027	Significant
		GNM	30	22				
		BSc nursing	39	21				
		MSc nursing	1	6				
4	Designation	Staff nurse	55	29	11.47	3	0.009	Significant
		Head nurse	1	0				
		Incharge nurse	13	13				
		Nurse Educator	1	8				
5	Work Experience	less than 1 Year	31	21	1.38	3	0.71	Not Significant
		2-5 years	23	21				
		5-10 years	8	4				
		More than 10 years	8	4				
6	Are you have work experience of Cancer department	Yes	19	17	0.65	1	0.41	Not Significant
		No	21	33				

**Table 3:** The association between Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital With selected demographic variables. n-120

Sr. No.	Variable	Groups	Attitude		Chi Squared	d.f	p value	Significance
			below Md	Above Md				
1	Age	20-25	44	34	4.92	3	0.18	Not Significant
		26-30	7	8				
		31-35	12	6				
		36 & above	8	1				
2	Gender	Male	14	19	5.28	1	0.022	Significant
		Female	57	30				
3	Qualification	ANM	0	0	6.51	2	0.039	Significant
		GNM	32	22				
		BSc nursing	38	21				
		MSc nursing	1	6				



4	Designation	Staff nurse	48	36	1.10	3	0.78	Not Significant
		Head nurse	1	0				
		Incharge nurse	16	10				
		Nurse Educator	6	3				
5	Work Experience	less than 1 Year	29	23	1.87	3	0.60	Not Significant
		2-5 years	25	19				
		5-10 years	9	3				
		More than 10 years	8	4				
6	Are you have work experience of Cancer department	Yes	20	16	0.28	1	0.60	Not Significant
		No	51	33				

**Table 4:** The association between Knowledge and Attitude Regarding CAR T-Cell Therapy Among Staff Nurses Working at a Selected Tertiary Care Hospital, n-120

Variable	Groups	Attitude			Chi Square	d.f.	p value	Significance
		Un-Favourable	Neutral	Favourable				
Knowledge	Poor	0	0	0	31.09	4	0.00	Significant
	Average	2	4	11				
	Good	0	0	53				
	Excellent	4	0	46				

**Conflict of Interest:** Not available.

**Financial Support:** Not available.

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