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Assessment of Knowledge on Colorectal Cancer among Caregivers at Tertiary Care Hospital, Andhra Pradesh

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Abstract:
Aim: *A study to assess the knowledge on colorectal cancer (CRC) among the caregivers attending Outpatient Departments, SVIMS, Tirupati.*
Objectives*: To assess the knowledge on CRC among the caregivers, to find out the association between level of knowledge with their selected socio-demographic variables.*
Materials and Methods: *Cross-sectional descriptive design was used. Independent variables were caregivers and dependent variables were Knowledge on CRC. The study was conducted at Outpatient Departments (OPDS), SVIMS, Tirupati. A total of 200 caregivers who fall under inclusion criteria by using non probability convenient sampling technique were selected. Knowledge was assessed by using structured questionnaire. Reliability was done by Inter-rater reliability method using Cronbachs alpha r=0.792 and stability by Split half method using Intra-class correlation coefficient r=0.71. Chi square & One way ANOVA were applied to test the hypothesis.*
Results: *The study findings revealed 37 % of caregivers have inadequate knowledge, 53.5 % have moderate knowledge, 9.5 % have adequate knowledge on CRC. The mean total knowledge score of CRC was 16.40 ± 5.5.Age, education, occupation, monthly income, residence shows significant association with level of knowledge on colorectal cancer (p<0.01).*
Conclusion: *It was concluded that majority of caregivers have moderate knowledge on CRC. So, there is a need to conduct health awareness programme to improve knowledge regarding risk factors, early detection of signs and symptoms and prevention of CRC*
Keywords: *Colorectal cancer (CRC), Outpatient Departments (OPDS).*

I. Introduction

1.1 Back Ground of the Study

Cancer is not a single disease with a single cause; rather, it is a group of distinct diseases that occur in any part of the body with different causes, manifestations, treatments, and prognosis. [1] The colon and rectum are part of the large intestine. When tumors form in the lining of the large intestine called colorectal cancer. The risk of developing colorectal cancer rises after age 50 years. [2] It also known as colon cancer, rectal cancer, or bowel cancer. It is due to the abnormal growth of cells that have the ability to invade or spread to other parts of the body. [3] The risk factors for colorectal cancer includes increasing age, positive family history, low dietary fibre, high saturated fat intake, red meat consumption, excess alcohol, lack of physical activity and having diabetes mellitus. [4] There are usually no symptoms associated with early-stage colorectal cancer. The American Cancer Society lists the following symptoms associated with more advanced stages of colorectal cancer-Bleeding in the rectum, bloody stools, a change in bowel habits, cramps in the colorectal region, anemia from the blood loss, weakness and fatigue, decreased appetite or weight loss.[5]

Diagnosis of colorectal cancer usually begins with a visit to your family doctors. Doctors will ask about any symptoms you have and may do a physical examination. Based on this information, Doctor may refer you to a specialist or order tests to check for colorectal cancer or other health problems. The following tests are commonly used to rule out or diagnose colorectal cancer--- Health history and physical examination, complete blood count, blood chemistry tests, stool tests like Aguaiac fecal occult blood test or fecal immunochemical test, double contrast barium enema, sigmoidoscopy, colonoscopy, biopsy, digital rectal examination, cell and tissue studies, CT scan, ultrasound, MRI, chest X-ray, PET scan.[6] There are several ways to treat colorectal cancer, depending on its type and stage- surgery, chemotherapy, radiation therapy, targeted therapy. For advanced colon and rectal cancer, ablation or embolization may also be used. Depending on the stage of the cancer and other factors, different types of treatment may be combined at the same time or used after one another. [7]

1.2 Need for the Study

Cancer is a leading cause of mortality and morbidity worldwide. The WHO estimated 7.6 million deaths due to cancer in the year 2005, a number has expected to rise to 12 million deaths by the year 2030 [8]

An estimated 1 million cases of colorectal cancer occur each year, accounting for more than 9% of all new cancers. Colorectal cancer is the second most common cancer in women [570000 cases, 9.4% of the total] and third most common cancer in men [663,000 cases, 10.0% of the total] worldwide. [9] According to the US preventive services task force and the American Cancer Society recommendations, every man and women aged 50 years and above should be screened for colorectal cancer using one of the screening tests like annual faecal occult blood test, sigmoidoscopy every 5 years, barium enema every 5 years or colonoscopy for every 10 years. [10] In India, colon cancer ranks 9th and rectal cancer 10th among the most common cancers in men. For women, rectal cancer does not figure in the 10 cancer, whereas colon cancer ranks 9th. [11] The highest adjusted incidence rate in men for colorectal cancer was recorded in Thiruvanthapuram, followed by Bengaluru and Mumbai. In women, thehighest adjusted incidence rate was recorded in Nagaland followed by Aizwal. Though considered as one among the preventable cancers, more than 70% of colorectal cancer are resulting into deaths in India. [12] The investigator observed many people getting admitted with colorectal cancer, when communicated with the caregivers, and came to know that there is lack of knowledge and the people are not paying much attention in lifestyle changes, early screening of colorectal cancer. This situation influenced the investigator to conduct the study on colorectal cancer to assess the level of knowledge among care givers for early detection and prevention.

1.3 Objectives

- To assess the knowledge on colorectal cancer among the caregivers.
- To find out the association between level of knowledge with their selected socio-demographic variables.

1.4 Null Hypothesis

$H_0$1: There is no significant difference with knowledge on colorectal cancer among the caregivers.
$H_0$2: There is no significant association between level of knowledge on colorectal cancer with their selected socio-demographic variables.

1.5 Assumptions

- Caregivers have less knowledge regarding the risk factors, diagnostic tests and prevention.
- Awareness improves the knowledge of caregivers which will help in the future to protect from colorectal cancer.

1.6 Projected outcome

- Findings of the study will help the caregivers to assess the knowledge on colorectal cancer.

1.7 Conceptual frame work

The conceptual framework for the present study was adopted from Rosen Stock's and Baker's Health Belief Model. The underlying concept of the original health belief model is that health behavior is determined by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence. [13] (Fig no.1)

This model comprises 3 components.

1. Modifying factors
2. Individual perceptions and
3. Likelihood of action.

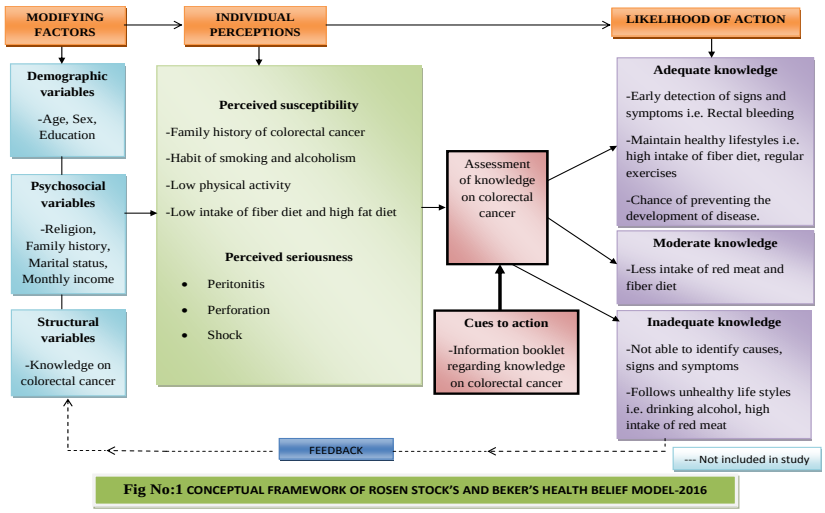

Fig No:1 CONCEPTUAL FRAMEWORK OF ROSEN STOCK'S AND BEKER'S HEALTH BELIEF MODEL-2016

II. Materials and Methods

2.1 Research design **:** Quantitative/ Cross-sectional descriptive design.
2.2 Settings **:** The study was conducted at Outpatient Departments, SVIMS, Tirupati.
2.3 Population **:** The population includes people who were attending Outpatient Departments of SVIMS, Tirupati.
2.4. Sample **:** Primary caregivers who were attending Outpatient Departments of SVIMS, Tirupati.
2.5. Sample size **:** The sample size consists of 200 caregivers who fall under inclusion criteria.
2.6. Sampling technique **:** Non-probability convenient sampling technique was adapted based on inclusion criteria

2.7 Criteria for sample selection:
Inclusion criteria**:**Caregivers-

- in the age group of 18-70 years.
- being physically and mentally competent to answer the questions.
- who were willing to participate and who gave consent for participation.

Exclusion criteria: Caregivers-

- who were already diagnosed with colorectal cancer or other types of cancer and undergoing treatment modalities like chemotherapy, radiation therapy, surgery.
- of patients who were diagnosed with cancer.
- with ulcerative colitis, crohn's disease, personal history of polyps.

2.8 Instrument:
Section-I: Consists of questions related to demographic data.
Section-II: A **structured questionnaire** to assess the knowledge on colorectal cancer among caregivers. Its consists of 31 dichotomous questions based on general information, risk factors, signs and symptoms, diagnostic measures, treatment, prevention of colorectal cancer by using yes/no options.
2.9 Score interpretation:

- 0-50% - Inadequate knowledge
- 51-75% - Moderate knowledge
- >76% - Adequate knowledge

2.10 Validity and reliability:
The content validity was obtained from oncologists and nursing department. The reliability of instrument was established by administering the tool to 20 caregivers who were not included in the pilot study and who fulfilled the inclusion criteria. **Internal consistency** of the tool was established by **Inter-rater reliability method** using **Chronbach's alpha r=0.792** and **stability** by **split half method** using **Intra-class correlation coefficient r=0.7**. The tool was found to be highly reliable.

2.11 Method of data collection:
A structured questionnaire was adapted to assess the knowledge on colorectal cancer among caregivers. The investigator obtained prior permission from the Dean, SVIMS,Tirupati to conduct the study. The investigator selected the samples by non-probability convenient sampling technique, who falls under inclusion criteria. The investigator made the caregiver to sit comfortably and the questionnaire was administered and asked them to tick the correct answer in the brackets given. For those who could not read and write the questionnaire, the investigator filed up the questionnaire as per the caregiver's response. The data collection took 15-20 minutes for completion from each participant. After the completion of data collection with the help of A.V. Aids the investigator explained about the meaning, cause and risk factors, signs and symptoms, diagnostic measures, treatment, prevention and then an information booklet was given to all participants for future references, and cooperation extended and willingness to participate in the study. The same procedure was followed for all 200 samples.

2.12: Plan for data analysis:
It was planned to analyse the data by using descriptive and inferential statistics.

- Frequency and percentage distribution used for demographic variables.
- Mean and standard deviation used for selected demographic variables, total level of knowledge score and domain wise knowledge score.
- Item wise analysis to assess the knowledge on various aspects of colorectal cancer among caregivers.

- Chi-square test was used to know the association between the level of knowledge on colorectal cancer with their selected socio demographic variables among the caregivers.
- Correlation of demographic variables with the knowledge on colorectal cancer among the caregivers.
- One-way ANOVA was used to know the mean variances of demographic variables with the knowledge on colorectal cancer among the caregivers.

2.13 Ethical considerations:

The study was conducted by the approval of scientific research ethics committee, faculty of nursing, SVIMS University. Participants were given explanation about the purpose of the study and they were also informed that they could withdraw from the study at any time before the completion of the study. Participants who agreed to complete the study were asked to sign a consent form. Confidentiality of participants was assured and the data were accessed only by the investigator involved in the study.

III. Results

The results shows that with respect to age 54.5% (109) were belongs to age group of 31-50 years, 58.0% (116) were females, 77.5% (155) belongs to Hindu religion, 56 % (112) were married, 26.5% (53) were graduates, 42 % (84) were homemakers, 62 % (124) have family monthly income <Rs.10,000, 41.5%(83) were living in rural area, 94 % (188) does not have a family history of colorectal cancer, 97.5% (195) were taking mixed vegetarian. (Table: 1). Regarding knowledge 37 % (74) of caregivers have inadequate knowledge, 53.5 % (107) of caregivers have moderate knowledge, 9.5 % (19) of caregivers have adequate knowledge on colorectal cancer. (Fig: 2)

With regard to domains of colorectal cancer it shows that regarding general information 55% of caregivers have inadequate knowledge, 17.5% have moderate knowledge and 27.5% have adequate knowledge on colorectal cancer. With regard to risk factors, 54% have inadequate knowledge, 40.5% have moderate knowledge and 5.5% have adequate knowledge on colorectal cancer. Considering the signs and symptoms, 55.5% have inadequate knowledge, 36% have moderate knowledge and 8.5% have adequate knowledge on colorectal cancer. Pertaining to diagnostic measures, 37.5% have inadequate knowledge, 32.5% have moderate knowledge and 30% have adequate knowledge on colorectal cancer. Concerning to treatment, 17.5% have inadequate knowledge, 42.5% have moderate knowledge and 40% have adequate knowledge on colorectal cancer. Related to prevention, 41.5% have inadequate knowledge, 41.5% have moderate knowledge and 17% have adequate knowledge on colorectal cancer. (Table: 2)The total mean knowledge score of colorectal cancer was 16.40 ± 5.5. Considering the general information of colorectal cancer, the mean knowledge score was 2.63 ± 0.9, for risk factors the mean knowledge score was 2.47 ± 1.2, for signs and symptoms the mean knowledge score was 2.33 ± 1.5, for diagnostic measures the mean knowledge score was 1.94 ± 0.9, for management the mean knowledge score was 3.17 ± 0.8, and for prevention the mean knowledge score was 3.87 ± 5.6. (Table:3)

Item analysis shows that 35% believed cancer is an abnormal proliferation of cells, 93.0% believed cancer is a treatable disease, 38.5% accepted colon, rectum is a part of intestine, 96.5% answered cancer can also arise in colon, rectum, 85.5% accepted risk of colorectal cancer will not increase with age, 67.5% revealed that males are more prone to get colorectal cancer than females, 31.0% believed intake of high fatty diet or red meat increases the risk, 97.0% answered smoking and alcohol consumption were risk factors, 94.0% accepted obesity is not a risk factor, 83.5% accepted that blood in stools is one of the symptom, 53.5% answered change in the bowel habits is a symptom of cancer and 30.0% believed lower abdominal pain is the common symptom, 13.5% revealed weight loss is present, 38.0% answered nausea, vomiting are less common symptoms of colorectal cancer, 86.0% accepted anemia is not present,94.5% believed that physical examination is useful to identify signs and symptoms of colorectal cancer, 61.5% answered abdominal scan helps to detect colon cancerous mass, 31.0% revealed colon, rectal biopsy is used to diagnose colorectal cancer and 6.5% answered colonoscopy helps to rule out colorectal cancer. 43.0% revealed treatment includes either surgery, chemotherapy or radiation therapy or combination of above modalities for colorectal cancer, 98.5% answered that compliance with treatment is very necessary to achieve cure, 94.5% believed good nutrition is necessary during treatment, 81.0% accepted follow up following completion of treatment is essential to detect recurrence of colorectal cancer 95.5% answered colorectal cancer is a preventable disease, 95.5% believed that avoiding smoking and alcohol consumption prevents colorectal cancer, 89.5% accepted eating low fiber foods prevents colorectal cancer, 42.5% revealed doing regular exercise prevents colorectal cancer, 52.5% believed eating fresh fruits and vegetables prevents colorectal cancer, 59.0% answered maintenance of normal body weight as per age prevents colorectal cancer, 69.0% answered if there is afamily history of colorectal cancer, screening is not needed for other members in the family. (Table:4) The association of demographic variables with knowledge on colorectal cancer among caregivers shows that Age, education, occupation, monthly was statistically significant at $p<0.01$ level. (Table: 5)

In correlation of demographic variables with knowledge on colorectal cancer among caregivers it was revealed that education, occupation, monthly income, residence were positively correlated at $p<0.01$ level. Age was negatively correlated at $p<0.01$ level. (Table: 6), The findings of mean variance of demographic variables with knowledge revealed that age, education, occupation, monthly income, residence were significant at $p<0.01$ level. Age, education, occupation, monthly income, residence were significant at $p<0.01$ level in the findings of one-way ANOVA. (Table: 7)

IV. Discussion

Healthy cells grow and divide in an orderly way to keep body functioning normally. But when a cell is damaged and becomes cancerous, cells continue to divide even when new cells aren't needed. These cancer cells can invade and destroy normal tissue nearby and cancerous cells can travel to other parts of the body. Cancer can arise in any part of the body for example: lung, stomach, breast, colon etc.When tumors form in the lining of the large intestine called colorectal cancer.The risk of developing colorectal cancer rises after age 50 years. [2]The first objective of the study was to assess the knowledge on colorectal cancer among the caregivers. The findings of the study revealed that, 37 % (74) of caregivers have inadequate knowledge, 53.5 % (107) have moderate knowledge and 9.5 % (19) have adequate knowledge on colorectal cancer. The mean knowledge score was 16.4 ± 5.6. In Western Australia, awareness and knowledge of colorectal cancer and screening were low (56%). The mean knowledge score was 13.3 ± 4.3. [14] So the null hypothesis **Ho1** which states that, there is no significant difference in knowledge on colorectal cancer among care givers has been **rejected.** The second objective of the study was to find out the association between level of knowledge with their selected socio-demographic variables. The results of the study show that age, education, occupation, monthly income, residence were associated with the level of knowledge with chi-square value of 61.6, 134, 49.3, 50.4, 62.6 which were statistically significant at $p<0.01$ level. The demographic variables like education, occupation, monthly income, residence were positively correlated at $p<0.01$ level. Age is negatively correlated at $p<0.01$ level. By comparing the mean variance age, education, occupation, monthly income, residence were significant at $p<0.01$ level. The findings from literature review of China, high and very high frequency of physical activities, shorter sleep duration and healthy vegetable consumption were found to be correlated with a reduced risk. On the contrast, elevated risks of colorectal cancer were observed in association with red meat consumption, diabetes and hyperlipidemia history of Inflammatory Bowel Disease and polyps. Smoking status, alcohol consumption, hypertension and gastritis were not correlated with the risk of colorectal cancer independently. [15] So the null hypothesis $\mathbf{H_0 2}$ which states that there is no significant association between level of knowledge on colorectal cancer with their selected socio demographic variables has been **rejected.**

V. Conclusion

It was concluded that majority of caregivers have moderate knowledge on colorectal cancer. So, there is a need to conduct health awareness programmes to improve knowledge regarding risk factors, early detection of signs and symptoms and prevention of colorectal cancer.

5.1 Nursing implications:

- Planned health teaching programmes are to be scheduled in the outpatient departments on fixed days for caregivers regarding the prevention of colorectal cancer.
- Nursing research should focus on the findings obtained from the study and identify the life style pattern in those who are at high risk of getting colorectal cancer and appropriate interventions should be planned and implemented to improve the better life style pattern.

5.2 Recommendations:

- A comparative study can be conducted to assess the knowledge on colorectal cancer among general population and colorectal cancer patients.
- An epidemiological study can be conducted to assess the prevalence of colorectal cancer.
- A quasi-experimental study can be conducted on effectiveness of structured teaching programme on life-style modifications and prevention of colorectal cancer among care givers.

Acknowledgement

We would like to extend sincere thanks to Dr. B.C .M. Prasad, M.Ch., Dean, Professor and Head, Department of Neurosurgery, SVIMS, Tirupati & Dr.P.Sudharani Principal I/c for permitting me to conduct the study. Last but not the least, I express my gratitude to all the subjects for their participation and co-operation for the study.

Tables and Figures

Table-1: Frequency and percentage distribution of demographic variables among thecaregivers on colorectal cancer.

(n=200)

Sl. No	Demographic variables	Frequency (f)	Percentage (%)
1.	**Age (in years)**		
	a. 18-30 years	51	25.5
	b. 31-50 years	109	54.5
	c. 51-70 years	40	20.0
2.	**Gender**		
	a.Male	84	42.0
	b. Female	116	58.0
3.	**Religion**		
	a. Hindu	155	77.5
	b. Muslim	19	9.5
	c. Christian	26	13.0
4.	**Marital status**		
	a. Unmarried	24	12.0
	b. Married	112	56.0
	c. Widow/widower	44	22.0
	d. Divorced/ Separated	20	10.0
5.	**Education**		
	a. Illiterate	46	23.0
	b. Primary school	28	14.0
	c. Secondary school	29	14.5
	d. Higher secondary	41	20.5
	e. Graduate	53	26.5
	f. Post graduate	3	1.5
6.	**Occupation**		
	a. Homemaker	84	42.0
	b. Unemployed	13	6.5
	c. Cooly	16	8.0
	d. Cultivation	27	13.5
	e. Government employee	12	6.0
	f. Private employee	45	22.5
	g. Retired	3	1.5
7.	**Monthly income in Rs.**		
	a. <10000	124	62.0
	b. 10001-20000	54	27.0
	c. 20001-30000	15	7.5
	d. >30000	7	3.5
8.	**Residence**		
	a. Rural	83	41.5
	b. Urban- slum	12	6.0
	c. Semi urban	58	29.0
	d. Urban	47	23.5
9.	**Family history of colorectal cancer**		
	a. Yes	12	6.0
	b. No	188	94.0
10.	**If yes, their relationship with you**		
	a. Mother	0	0.0
	b. Father	0	0.0
	c. Grandparents	0	0.0
	d. Other [close relatives]	12	6.0
11.	**Type of diet**		
	a. Vegetarian	5	2.5
	b. Mixed vegetarian	195	97.5
12.	**If Mixed- vegetarian do you take red meat.**		
	a. Yes		
	b. No	41	20.5
		154	77.0
13.	**If yes how frequently do you take**		
	a. Once in a week	0	0.0
	b. Once in two weeks	7	3.5
	c. Once in three weeks	13	6.5
	d. More than once in a week	0	0.0
	f. Occasionally	21	10.5

Table-2: Frequency and percentage distribution of level of knowledge on domains of colorectal cancer among the caregivers

(n= 200)

Sl. NO	Domains	level of knowledge on colorectal cancer					
		Inadequate (0 – 50%)		Moderate (51 – 75%)		Adequate (> 76%)	
		F	%	f	%	f	%
1.	General information	110	55.0	35	17.5	55	27.5
2.	Risk factors	108	54.0	81	40.5	11	5.50
3.	Signs and symptoms	111	55.5	72	36.0	17	8.50
4.	Diagnostic measures	75	37.5	65	32.5	60	30.0
5.	Treatment	35	17.5	85	42.5	80	40.0
6.	Prevention	83	41.5	83	41.5	34	17.0

Table-3: Mean and standard deviation of domain wise knowledge on colorectal cancer among the caregivers

(n= 200)

Sl. No	Domains	Mean	Standard deviation
1	General information	2.63	0.994
2	Risk factors	2.47	1.177
3	Signs and symptoms	2.33	1.459
4	Diagnostic measures	1.94	0.908
5	Treatment	3.17	0.857
6	Prevention	3.87	1.646
	Overall score	**16.40**	**5.564**

Table-4: Item wise analysis of knowledge on colorectal cancer among the caregivers on colorectal cancer.

(n=200)

Sl.No	Questions related to General information	YES		NO	
		f	%	f	%
1	An abnormal proliferation of cells is called cancer.	70	35.0	130	65.0
2	Cancer is a treatable disease.	186	93.0	14	7.0
3	Colon, rectum is a part of intestine.	77	38.5	123	61.5
4	Cancer can also arise in colon, rectum.	193	96.5	7	3.5
	Questions related to Risk factors				
5	The risk of colorectal cancer will not increase with age.	171	85.5	29	14.5
6	Males are more prone to get colorectal cancer than females.	135	67.5	65	32.5
7	Intake of high fatty diet or red meat increases the risk of getting colorectal cancer.	62	31.0	138	69.0
8	Smoking and alcohol consumption are risk factors for colorectal cancer.	194	97.0	6	3.0
9	Family history is a risk factor for colorectal cancer.	62	31.0	138	69.0
10	Obesity is not a risk factor	188	94.0	12	6.0
	Questions related to signs and symptoms				
11	Blood in stools is one of the symptoms of colorectal cancer.	167	83.5	33	16.5
12	Change in the bowel habits is a common symptom of cancer.	107	53.5	93	46.5
13	Lower abdominal pain is a common symptom.	60	30.0	140	70.0
14	Weight loss is present in colorectal cancer.	27	13.5	173	86.5
15	Nausea, vomiting are the less common symptoms.	76	38.0	124	62.0
16	Anemia is not present in colorectal cancer.	172	86.0	28	14.0
	Questions related to Diagnostic measures				
17	Physical examination is useful to identify signs and symptoms of colorectal cancer.	189	94.5	11	5.5
18	Abdominal scan helps to detect colon cancerous mass.	123	61.5	77	38.5
19	Colon, rectal biopsy is used to diagnose the colorectal cancer.	62	31.0	138	69.0
20	Colonocopy helps to rule out colorectal cancer	13	6.5	187	93.5
	Questions related to Treatment				
21	Treatment includes either surgery, chemotherapy or radiation therapy or combination of above modalities.	86	43.0	114	57.0
22	Compliance with treatment is very necessary to achieve cure.	197	98.5	3	1.5
23	Good nutrition is necessary during treatment.	189	94.5	11	5.5
24	Follow up following completion of treatment is essential to detect recurrence.	162	81.0	38	19.0

	Questions related to prevention				
25	Colorectal cancer is a preventable disease.	191	95.5	9	4.5
26	Avoiding smoking and alcohol consumption prevents colorectal cancer.	191	95.5	9	4.5
27	Eating low fiber foods prevents colorectal cancer.	179	89.5	21	10.5
28	Doing regular exercise prevents colorectal cancer.	85	42.5	115	57.5
29	Eating fresh fruits and vegetables prevents colorectal cancer.	105	52.5	95	47.5
30	Maintenance of normal body weight as per age prevents colorectal cancer.	118	59.0	82	41.0
31	If there is a family history of colorectal cancer, screening is not needed for other members in the family	138	69.0	62	31.0

Table-5: Association between the level of knowledge on colorectal cancer with their selected socio demographic variables among the caregivers

(n=200)

Sl. No	Demographic variables	Knowledge on colorectal cancer								Chi-square (X^2)	'p' value
		Inadequate (0-50%)		Moderate (51-75%)		Adequate (>75%)		Total			
		F	%	f	%	f	%	f	%		
1.	**Age (in years)**										
	a. 18-30 years	8	15.7	30	58.8	13	25.5	51	100		
	b. 31-50 years	33	30.3	70	64.2	6	5.5	109	100	61.63	0.00**
	c. 51-70 years	33	82.5	7	17.5	0	0.0	40	100		
2.	**Gender**										
	a. Male	24	28.6	52	61.947.4	8	9.5	84	100	4.69	0.09
	b. Female	50	43.1	55		11	9.5	116	100		NS
3.	**Religion**										
	a. Hindu	57	36.8	85	54.8	13	8.4	155	100		
	b. Muslim	11	57.9	7	36.8	1	5.3	19	100	7.88	0.09
	c. Christian	6	23.1	15	57.7	5	19.2	26	100		NS
4.	**Marital status**										
	a. Unmarried	4	16.7	15	62.5	5	20.8	24	100		
	b. Married	45	40.2	60	53.6	7	6.2	112	100	9.48	0.14
	c. Widow/widower	19	43.2	21	47.7	4	9.1	44	100		NS
	d..Divorced/ Separated	6	30.0	11	55.0	3	15.0	20	100		
5.	**Education**										
	a. Illiterate	42	91.3	4	8.7	0	0.0	46	100		
	b. Primary school	16	57.1	12	42.9	0	0.0	28	100	134.0	0.00**
	c. Secondary school	9	31.0	20	69.0	0	0.0	29	100		
	d. Higher secondary	5	12.2	35	85.4	1	2.4	41	100		
	e. Graduate	2	3.8	34	64.1	17	32.1	53	100		
	f. Post graduate	0	0.0	2	66.7	1	33.3	3	100		
6.	**Occupation**										
	a. Homemaker	45	53.5	35	41.7	4	4.8	84	100		
	b. Unemployed	5	38.4	6	46.2	2	15.4	13	100		
	c. Cooly	6	37.5	10	62.5	0	0.0	16	100		
	d. Cultivation	14	51.9	13	48.1	0	0.0	27	100	49.33	0.00**
	e. Government employee	1	8.3	7	58.3	4	33.3	12	100		
	f. Private employee	3	6.7	33	73.3	9	20.0	45	100		
	g. Retired	0	0.0	3	100.0	0	0.0	3	100		
7.	**Monthly income in RS.**										
	a. < 10000	67	54.0	54	43.5	3	2.4	124	100		
	b. 10001-20000	6	11.1	38	70.4	10	18.5	54	100		
	c. 20001-30000	1	6.6	10	66.7	4	26.7	15	100	50.39	0.00**
	d. > 30000	0	0.0	5	71.4	2	28.6	7	100		
8.	**Residence**										
	a. Rural	49	59.0	32	38.6	2	2.4	83	100		
	b. Urban- slum	5	41.7	6	50.0	1	8.3	12	100	62.641	0.000**
	c. Semi urban	16	27.6	41	70.7	1	1.7	58	100		
	d. Urban	4	8.5	28	59.6	15	31.9	47	100		
9.	**Family history of colorectal cancer**										
	a. Yes	2	16.6	8	66.7	2	16.7	12	100	2.53	0.28
	b. No	72	38.3	99	52.7	17	9.0	188	100		NS
10.	**Type of diet**										
	a. Vegetarian	1	20.0	4	80.0	0	0.0	5	100	1.56	0.45
	b. Mixed vegetarian	73	37.4	103	52.8	19	9.7	195	100		NS
11.	**If Mixed-vegetarian do you take red meat.**										
	a. Yes	22	53.7	21	36.8	8	9.5	51	100	4.87	0.08
	b. No	51	33.1	82	57.4	11	9.5	144	100		NS
12.	**If yes, how frequently do**										

	you take										
	a. Once in a week	-	0.0	-	0.0	-	0.0	-	0		0.80
	b. Once in two weeks	3	42.9	4	57.146.2	0	0.0	7	100	0.43	NS
	c. Once in three weeks	7	53.8	6	0.0	0	0.0	13	100		
	d. More than once in a week	-	0.0	-	0.0	-	0.0	-	0		
	f. Occasionally	12	57.1	9	42.9	0	0.0	21	100		

Table-6: Correlation of demographic variables with knowledge on colorectal cancer among the caregivers **(n=200)**

Sl. No	Demographic Variables	'r' value	'p' value
1.	Age	-0.485	0.000**
2.	Sex	-0.126	0.075
3.	Religion	0.041	0.567
4.	Marital status	-0.075	0.291
5.	Education	0.723	0.000**
6.	Occupation	0.384	0.000**
7.	Monthly income in Rs.	0.495	0.000**
8.	Residence	0.477	0.000**
9.	Family history of colorectal cancer	-0.112	0.113
10.	Type of diet	-0.029	0.681
11.	If mixed vegetarian do you take red meat	0.087	0.222
12.	If yes, how frequently do you take	-0.091	0.572

Table-7: Mean variance among demographic variables with the knowledge on colorectal cancer among the caregivers

(n=200)

Sl. No	Demographic variables	Mean	Standard deviation	'f ' value	'p' value
1.	**Age (in years)**				
	a. 18-30 years	19.76	4.466		
	b. 31-50 years	16.91	4.644	44.106	0.000**
	c. 51-70 years	10.70	4.879		
2.	**Gender**				
	a. Male	16.79	5.362	't' value	0.399NS
	b. Female	16.11	5.712	0.845	
3.	**Religion**				
	a. Hindu	16.43	5.296		
	b. Muslim	13.74	6.674	3.501	0.32NS
	c. Christian	18.12	5.750		
4.	**Marital status**				
	a. Unmarried	19.08	4.491		
	b. Married	15.97	5.047	2.279	0.081NS
	c. Widow/widower	15.86	6.815		
	d. Divorced/Separated	16.70	5.913		
5.	**Education**				
	a. Illiterate	9.83	3.335		
	b. Primary school	13.93	4.337		
	c. Secondary school	16.66	3.330	65.398	0.000**
	d. Higher secondary	17.95	2.828		
	e. Graduate	21.81	3.453		
	f. Post graduate	20.67	4.163		
6.	**Occupation**				
	a. Homemaker	14.48	5.235		
	b. Unemployed	17.08	6.251		
	c. Cooly	15.00	5.428		
	d. Cultivation	13.67	4.359	11.694	0.000**
	e. Government employee	22.33	4.185		
	e. Private employee	20.24	3.803		
	f. Retired	17.67	2.082		
7.	**Monthly income in RS.**				
	a. <10000	14.11	5.000		
	b. 10001-20000	19.48	4.382	26.825	0.000**
	c. 20001-30000	21.07	3.807		
	d. > 30000	23.00	3.464		

8.	**Residence**				
	a. Rural	13.47	4.952		
	b. Urban- slum	17.08	4.719	25.450	0.000**
	c. Semi urban	16.69	4.608		
	d. Urban	21.02	4.585		
9.	**Family history of colorectal cancer**				
	a. Yes	17.92	5.089	't' value	0.330NS
	b. No	16.30	5.591	0.977	
10.	**Type of diet**				
	a. Vegetarian	19.40	3.912	't' value	0.222NS
	b. Mixed vegetarian	16.32	5.585	1.225	
11.	**If Mixed- vegetarian do you take red meat.**				
	a. Yes	14.00	4.712	't' value	0.637NS
	b. No	16.94	5.651	3.054	
12.	**If yes, how frequently do you take**				
	a. Once in a week	0.0	0.0		
	b. Once in two weeks	14.57	4.860		
	c. Once in three weeks	13.92	3.774	0.060	0.942NS
	d. More than once in a week.	0.0	0.0		
	f. Occasionally	13.86	5.351		

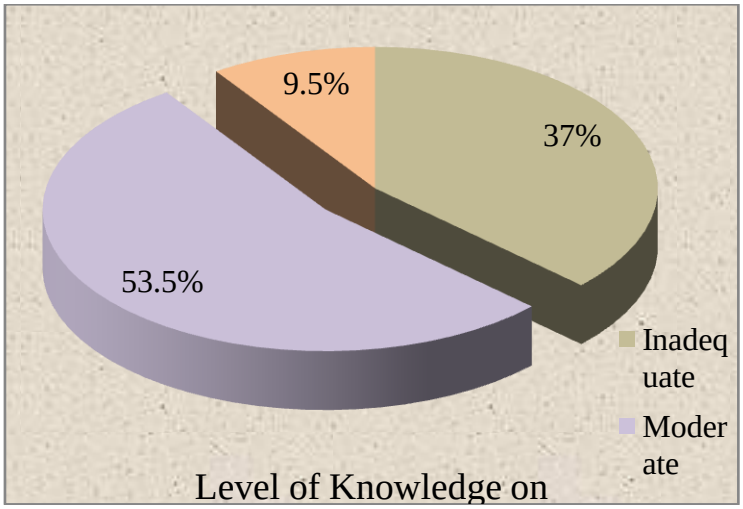

Fig:2 Percentage of level of knowledge on colorectal cancer among the caregivers

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