National Rural Health Mission, patient rights and patient safety: A need to strategize among the patients and healthcare professionals

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Abstract

Purpose: National Rural Health Mission (NRHM) focuses on advancing the quality of rural heath sectors and improving health services with its goal in embellishing the quality of health. This study aimed to understand the utilization of NRHM in rural areas by assessing the awareness on NRHM, knowledge of patient's rights among the patients and safety perception among the healthcare professionals (HCPs).

Participants and method: A prospective questionnaire based cross sectional study was performed from January 2021 to December 2021 among the patients and HCPs from the rural healthcare facilities in a south Indian district. Patients who are admitted to the rural hospitals were interviewed to assess the awareness on NRHM and knowledge on patient's rights; and HCPs were assessed for their perception on patient safety. Descriptive statistics were performed to present the basic demographics and chi-square was used to assess the effect of variables on the various aspects of NRHM awareness and patient's rights; and perception on patient safety using SPSS software.

Results: A total 100 patients and 100 HCPs were included in this study. Age, gender, religion, marital status, type of family, education, occupation, socioeconomic level, and information source all had an impact on their NRHM awareness and patient rights, as well as their view of patient safety.

Conclusion: There is a need to implement more programs and camps to make them adequately aware on NRHM and patient's rights among the rural populations.HCPs in rural population needs to focus implementing their vision on patient's safety for a better patient care.

Key words: NRHM, patient, healthcare professional, right, safety

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1. Introduction

Educating patients on their health, healthcare providers(HCPs) about patient's expectations, and government the preparedness on treatment and consideration is much more important than educating health policy makers and providers [1]. Patients profit from this because they can spend less time in the hospital and make better use of healthcare providers, improving their quality of life. Patients' fundamental and essential rights include being treated with decency and respect when receiving healthcare, the right to confidentiality, the right to be informed, the ability to make decisions, the right to obtain informed consent, and the right to compensation in the event of a grievance.[2]. Patient rights are based on four models of physician-patient relationships, the Universal Declaration of Human Rights (UDHR) (1948). The model is paternalistic, instructive, interpretive, and deliberative. [3].

Despite the fact that our country has undertaken numerous campaigns and awareness programmes, maternity and child health (MCH) imbalances still exist, with high infant mortality rates (IMR) and maternal mortality ratios (MMR).[4]. Developing countries like India have high probability for nosocomial infections and adverse drug reactions in a hospital which is 20 times high compared to developed countries. The rural places in India lack proper policies or strategies for patient health and safety requiring an evolution [5]. Wilson et al. found that over 8.2 percent of 15,548 records had at least one

adverse event, with 83 percent of these being preventable adverse medication responses and 30 percent being the cause of patient mortality.[6].

Joshi SK elucidated through his publication on law and practice of medicine that, it is the right of the patient who is sick and in misery to be provided with right medical therapy administered by the right health care professional and at the right time with all respect and dignity [7]. Earlier in India even though there were no legal forms on patient rights, indirect conferring of patient privilege by judgements from courts such as Indian medical council (IMC) regulations and Consumer protection act (COPRA) was done [8].

There has been a continuing attempt to build a patient safety culture as the healthcare sector has improved through time. In order to succeed, this necessitates a grasp of an organization's behaviour, communication, and attitudes. [9]. Medical errors could be reduced by improving the systems practiced at hospital with a competent team, leadership and management qualities with employee attention on safety[5].

National Rural Health Mission (NRHM) focuses on advancing the quality of rural heath sectors and improving health services with its goal in embellishing the quality of health (10). NRHM was implemented with the aim to improve outcomes in MCH and provide quality health services to everybody, in particular the poor people with no differences based on gender, geographical area or socioeconomic status [11].

The public health system in India is chronically underfunded, with extremely high patient numbers and a paucity of trained medical personnel. While some research on patient safety has been conducted in low- and middle-income countries to explore physicians' attitudes, beliefs, and behaviours related to patient safety, the majority of studies have been conducted in the developed world. There is very little research on HCPs' attitudes on patient safety strategies. In the south Indian state of Karnataka, the goal of this study was to measure NRHM awareness, knowledge of patient rights among patients, and safety perception among HCPs in rural Mandaya area.

2. Materials and methods

2.1 *Study design, Area and Period*

In the rural areas of the south Indian state of Karnataka, a prospective, cross-sectional community-based study was undertaken for a year, from January to December 2021. In seven Taluks of the district, health facilities from the village level up to the district level, including sub-centres (SC), primary health centres (PHC), community health centres (CHC), and district hospital (DH).

2.2 *Study criteria*

Our study included individuals and patients of The National Rural Health Mission (NRHM) is a government-funded initiative that aims to improve), to assess the utilization of NRHM and patients' rights. Information was collected from The family's head of household or any other responsible member. People who lived in the rural sections of the chosen district were excluded from the study. Patients getting health care from sources other than NRHM and those who refused to participate were excluded.

2.3 *Sample size determination*

The convenience random selection technique was used to pick a sample size of hospitalised patients (10% of total admitted patients), i.e. 60 from the general ward and 60 from the private ward. Participants in the study were hospital employees who worked in a variety of clinical settings and hospital units for the sake of patient safety.

2.4 *Data collection procedure and tool*

Direct interview of the patients along with patient case notes from medication/treatment charts, laboratory data reports and other relevant source were used. Self-structured questionnaire on awareness of patient rights in English language was designed to include of There are 40 questions divided into three sections: demographics, patient rights awareness, and patient rights practise. The content and language of this questionnaire were approved by four experts. A 3-scale rating (agree, not sure, disagree) questionnaire was used to assess awareness and practise. 'Agree' was regarded aware/practiced, however 'not sure or disagree' was not. Patient data collection form was used to obtain demographic details from the included participants. A validated evaluation questionnaire with 09 patient safety culture aspects was used to examine the respondent's perspective of patient safety in their patient care unit (8 dimensions) as well as their general opinion of patient safety in the hospital (2 dimensions). Each category had three to five items on a five-point likert scale of agreement

(strongly disagree to strongly agree) or frequency (strongly disagree to strongly agree) (never to always).

A self-prepared questionnaire on awareness of NRHM was also used consisting of 38 items regarding utilization and knowledge of NRHM services. It was assessed in an Yes or No format. Families would be chosen at random, and one responsible person capable of making family decisions from each family that met the inclusion criteria would be chosen at random.. Interview was taken for those who were unable to read for an average time of 25-30 minutes. During the process of data collection, fellow colleagues working in the selected districts and village leaders helped in meeting with authorities to identify the location of villages.

2.5 *Data analysing*

Microsoft excel Statistical Package for Social Sciences version 16 was used to analyse the data. The frequency, average, and standard deviations were employed as descriptive statistics. Analytical statistics were used to compare variables. Awareness of NRHM services, understanding of patient rights, and perceptions of patient safety were described using descriptive statistics such as frequency and percentage. Inferential statistics such as chi-square test was used to see the association between selected demographic variables and findings of awareness on NRHM services, knowledge on patient's rights and perception on patient safety. A p-value of <0.05 was considered statistically significant.

2.6 *Ethical consideration*

Ethical approval was obtained from the Institutional Ethics Committee of the concerned institutions. The NRHM department, the CHC medical officer, and the PHC village sarpanch were all given formal authorization after describing the research study's purpose. Before the study began, the participants gave their informed consent.

3. Results

3.1. Participants included for NHRM awareness, rights and patients' rights

For the purpose of assessing NHRM awareness and rights, a total of 100 patients from the chosen geographical location took part in the study. In the patient safety analysis, a total of 100 HCPs were considered. Majority of the population in the age group of 21-30 years among the patients (25%) and safety (63%) of NRHM. Male gender was more among the patients (59%) while female gender was 58% among HCPs. Hindu's were more among the patients (97%) and HCPs (94%). Married people were more among the patients (74%) and 57% among HCPs. People living with joint family were more among the patients (58%) while those living as a nuclear family were 57% among HCPs. Graduates and above were 54% among the patients and 76% among HCPs. Lower middle class families were more among the patients (38%) while upper middle class family were more among HCPs(66%). Television was the common information resource for rights (30%) of NRHM while Radio was the common source for safety (39%). About 78% of population had adequate awareness on rights of NRHM while 3% of them had complete lack of awareness on NRHM. A detailed description of the participants were presented in the Table 1.

Table 1: Demographic details of the patients and HCPs included in the study

Variables	Response category	Patients (n=100) (%)	HCPs (n=100) (%)
Age	≤20 years	9 (9)	7 (7)
	21-30 years	25 (25)	63 (63)
	31-40 years	24 (24)	16 (16)
	41-50 years	19 (19)	6 (6)
	51-60 years	18 (18)	5 (5)
	>60 years	5 (5)	3 (3)
Gender	Male	59 (59)	42 (42)
	Female	41 (41)	58 (58)
BMI	Underweight	15 (15)	15 (15)
	Normal	43 (43)	55 (55)
	Overweight	30 (30)	25 (25)
	Obese	12 (12)	5 (5)
Smoking	Yes	6 (6)	6 (6)
	No	94 (94)	94 (94)
Alcoholic	Yes	12 (12)	10 (10)
	No	88 (88)	90 (90)
Exercise	Yes	33 (33)	29 (29)
	No	67 (67)	71 (71)
Diet	Veg	19 (19)	30 (30)
	Mixed	81 (81)	70 (70)
Religion	Hindu	97 (97)	94 (94)
	Muslim	3 (3)	6 (6)
Marital status	Married	74 (74)	57 (57)
	Unmarried	26 (26)	43 (43)
Types of family	Nuclear	42 (42)	57 (57)
	Joint	58 (58)	43 (43)
Place of residence	Urban	8 (8)	6 (6)
	Rural	92 (92)	94 (94)
Education	Illiterate	26 (26)	
	Primary	1 (1)	
	Intermediate	19 (19)	24 (24)
	Graduate	54 (54)	76 (76)
Occupation	Senior officials	18 (18)	7 (7)
	Healthcare practitioners	18 (18)	61 (61)
	Technicians	23 (23)	28 (28)
	Clerks	3 (3)	4 (4)
	Skilled workers	4 (4)	
	Skilled agriculturalist	12 (12)	
	Craft and trade related	5 (5)	
	Plant and machine operators	5 (5)	
	Elementary occupation	5 (5)	
	Unemployed	7 (7)	

Income	<10k 10-30k 30-50k 50-75k 75-99k >99k	22 (22) 47 (47) 17 (17) 6 (6) 2 (2) 6 (6)	19 (19) 33 (33) 25 (25) 8 (8) 6 (6) 3 (3)
Socioeconomic status	Upper Upper middle Lower middle Upper lower Lower	5 (5) 34 (34) 38 (38) 18 (18) 5 (5)	5 (5) 66 (66) 19 (19) 7 (7) 3 (3)
Information resources	Radio Grampanchth Internet Television Friends Cinema Newspaper Social media	15 (15) 14 (14) 5 (5) 30 (30) 13 (13) 3 (3) 15 (15) 5 (5)	39 (39) 3 (3) 13 (13) 17 (17) 2 (2) 2 (2) 8 (8) 16 (16)
Awareness	lack of awareness Inadequate awareness Adequate awareness	3 (3) 19 (19) 78 (78)	NA

3.2. Awareness on National rural health mission

The demographic details were correlated with the 38 questions on NRHM awareness. A significant association (≤0.05) of gender on awareness of healthcare staff at health centre being inadequate, rogikalyan samiti at village It was found that a facility for referral of complicated cases of pregnancy and delivery was available at the sub-centre for 24 hours. There was a significant relationship between age and understanding of different NRHM schemes and transportation charges for moving patients. A significant association between Hindu and Muslims on main goal of reduction in maternal mortality rate and others, appointment of ASHA workers to provide healthcare service in every village, satisfaction of health services provided in health facility. With marital status a significant association was seen on awareness related to insurance scheme for rural people, Janani suraksha yojana, Janani suraksha shisha karyakram, cash assistance provided to mother's and access to safe drinking water at village. Significant association on type of family regarding knowledge on NRHM was seen. Association between awareness of NRHM and education was significant on ASHA workers coming regularly for home visits, healthcare workers making regular home visits and giving advice on nutritional food and satisfied communication with healthcare staff. Significant association between occupation and inadequate health care staff centre was found. Association between income and awareness of NRHM mission, awareness on antenatal check-ups and immunization, access to safe drinking water and awareness on transport charges for shifting patient were significant. Significant association was found between information resources and awareness of NRHM mission and its initiation, facility for referral of complicated cases of pregnancy at subunits, awareness of Janani suraksha yojana and access to safe drinking water at village. The effects of various demographics on the NRHM awareness is provided in table 2.

Table 2: Factors affecting the Awareness on National rural health mission

Variables	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38
Age																																						
≤20 years	8	9	5	8	7	5	4	4	6	8	9	8	8	6	5	5	7	7	5	8	6	6	7	7	1	2	6	8	6	6	8	5	4	5	7	7	6
21-30 years	24	23	19	22	24	20	20	18	17	24	24	23	19	22	20	18	17	15	19	21	20	15	15	21	21	19	14	20	17	22	23	19	21	19	18	24	20	23
31-40 years	22	21	16	18	22	19	18	18	18	20	23	21	20	18	17	15	15	13	18	19	17	12	13	19	18	13	15	19	15	17	17	17	14	11	13	19	19	20
41-50 years	16	19	15	16	18	17	16	17	15	19	19	17	17	18	17	13	15	11	17	17	17	11	13	19	16	11	12	14	15	17	16	17	16	16	16	15	18	18
51-60 years	16	14	14	16	17	17	15	15	14	18	16	17	17	17	16	11	16	9	16	15	16	12	8	15	17	13	12	14	12	13	12	15	14	13	12	17	17	16
>60 years	6	5	5	5	5	5	4	4	3	5	5	5	4	4	2	2	3	2	5	5	5	3	3	5	5	3	4	3	3	5	4	5	5	4	4	5	4	5
Chi-square	0.795	0.186	0.487	0.658	0.530	0.132	0.256	0.179	0.910	0.150	0.586	0.940	0.638	0.391	0.138	0.781	0.340	0.744	0.562	0.278	0.425	0.915	0.750	0.354	0.532	**0.022**	0.241	0.905	0.657	0.282	0.303	0.479	0.107	**0.051**	0.350	0.262	0.511	0.281
Gender																																						
Male	55	52	43	52	56	49	45	42	44	56	58	55	52	54	42	36	37	29	47	50	49	34	33	50	51	33	35	47	39	46	47	48	44	40	43	54	53	54
Female	53	39	31	33	37	34	32	34	29	38	38	36	33	33	36	28	34	28	35	32	34	25	25	36	33	27	24	29	31	34	31	33	31	27	25	33	32	34
Chi-square	0.198	0.230	0.760	0.292	0.368	0.987	0.835	0.176	0.670	0.644	0.158	0.352	0.292	0.106	**0.048**	0.456	**0.028**	**0.057**	0.465	0.391	0.987	0.738	0.615	0.665	0.425	0.319	0.937	0.304	0.308	0.542	0.631	0.913	0.907	0.839	0.209	0.106	0.105	0.193
BMI																																						
Underweight	14	14	12	12	15	12	12	11	11	14	14	15	11	13	13	11	12	10	11	11	12	8	9	12	10	9	7	10	10	13	13	10	11	9	8	13	10	11
Normal	38	39	28	36	36	34	28	31	32	39	41	37	37	35	31	27	29	24	33	36	35	26	27	37	38	25	26	32	30	34	32	33	32	27	30	39	38	39
Overweight	28	26	23	25	30	27	25	25	24	30	29	28	26	27	23	18	21	16	27	25	26	18	14	25	25	17	19	23	20	23	22	26	23	22	22	25	26	26
Obese	10	12	11	12	12	10	12	9	6	11	12	11	11	12	11	8	9	7	11	10	10	7	8	12	11	9	7	11	10	10	11	12	9	9	8	10	11	12
Chi-square	0.735	0.577	0.251	0.469	**0.019**	0.657	**0.051**	0.727	0.260	0.411	0.835	0.395	0.547	0.358	0.412	0.840	0.810	0.857	0.304	0.825	0.927	0.969	0.497	0.461	0.212	0.723	0.749	0.494	0.740	0.866	0.446	0.114	0.995	0.667	0.584	0.796	0.185	0.169
Smoking																																						
Yes	5	5	4	5	6	5	4	5	4	6	5	4	3	5	2	2	4	2	4	4	4	4	3	6	4	3	2	5	4	3	3	5	4	3	5	6	5	4
No	85	86	70	80	87	78	73	71	69	88	91	87	82	82	76	62	67	55	78	78	79	55	55	80	80	57	57	71	66	77	75	76	71	64	63	81	80	84
Chi-square	0.575	0.499	0.673	0.906	0.488	0.982	0.535	0.664	0.719	0.523	0.102	**0.032**	**0.013**	0.783	**0.006**	0.107	0.809	0.227	0.313	0.313	0.272	0.694	0.682	0.308	0.232	0.606	0.187	0.664	0.854	**0.058**	0.088	0.881	0.627	0.361	0.406	0.329	0.906	0.097
Alcoholic																																						
Yes	11	11	10	11	12	11	11	10	10	12	11	11	10	11	7	8	10	7	11	10	10	9	9	11	11	9	9	11	10	8	9	11	10	8	11	11	10	10
No	79	80	64	74	81	72	66	66	63	82	85	80	75	76	71	56	61	50	71	72	73	50	49	75	73	51	50	65	60	72	69	70	65	59	57	76	75	78
Chi-square	0.837	0.931	0.432	0.491	0.311	0.394	0.198	0.526	0.390	0.351	0.414	0.931	0.863	0.608	0.080	0.837	0.316	0.921	0.353	0.898	0.974	0.230	0.203	0.546	0.440	0.258	0.230	0.176	0.283	0.218	0.789	0.315	0.477	0.979	**0.051**	0.608	0.863	0.596
Exercise																																						
Yes	29	30	26	28	33	29	29	28	27	33	32	32	30	30	27	23	28	20	28	28	29	21	24	28	31	26	20	29	23	28	26	29	24	23	23	32	30	28
No	61	61	48	57	60	54	48	48	46	61	64	59	55	57	51	41	43	37	54	54	54	38	34	58	53	34	39	47	47	52	52	52	51	44	45	55	55	60
Chi-square	0.620	0.982	0.444	0.976	**0.054**	0.362	0.070	0.146	0.163	0.076	0.728	0.143	0.245	0.415	0.518	0.405	**0.032**	0.609	0.603	0.603	0.362	0.508	**0.036**	0.816	**0.057**	**0.007**	0.819	**0.051**	0.963	0.395	0.894	0.218	0.713	0.687	0.798	**0.037**	0.245	0.496
Diet																																						
Veg	15	17	13	16	18	17	15	14	16	19	19	18	16	18	13	13	15	8	15	17	15	10	9	16	19	15	14	15	13	16	15	17	15	16	14	18	18	16
Mixed	75	74	61	69	75	66	62	62	57	75	77	73	69	69	65	51	56	49	67	65	68	49	49	70	65	45	45	61	57	64	63	64	60	51	54	69	67	72
Chi-square	0.074	0.796	0.538	0.915	0.742	0.404	0.823	0.793	0.221	0.221	0.323	0.527	0.915	0.265	0.263	0.656	0.396	0.145	0.700	0.346	0.601	0.531	0.297	0.803	**0.035**	0.061	0.148	0.738	0.867	0.610	0.912	0.295	0.659	0.076	0.555	0.265	0.187	0.572
Religion																																						
Hindu	87	88	73	82	92	80	75	75	71	93	93	89	83	85	76	61	70	54	80	81	80	57	55	83	82	59	57	73	67	78	76	78	72	66	65	85	83	85
Muslim	3	3	1	3	1	3	2	1	2	1	3	2	2	2	2	3	1	3	2	1	3	2	3	3	2	1	2	3	3	2	2	3	3	1	3	2	2	3
Chi-square	0.558	0.580	0.103	0.460	**0.000**	0.426	0.666	0.079	0.802	**0.000**	0.720	0.135	0.367	0.288	0.630	0.187	0.144	0.127	0.483	**0.026**	0.426	0.784	0.135	0.478	0.406	0.338	0.784	0.323	0.250	0.558	0.630	0.394	0.310	0.208	0.228	0.288	0.367	0.516
Marital status																																						
Married	66	67	58	63	69	65	62	62	58	71	71	68	65	64	61	48	55	42	64	63	63	43	43	67	62	47	47	56	52	61	56	61	56	50	49	64	65	67
Unmarried	24	24	16	22	24	18	15	14	15	23	25	23	20	23	17	16	16	15	18	19	20	16	15	19	22	13	12	20	18	19	22	20	19	17	19	23	20	21
Chi-square	0.648	0.787	0.092	0.949	0.872	**0.030**	**0.007**	**0.002**	**0.041**	0.167	0.963	0.599	0.180	0.797	0.071	0.761	0.216	0.934	**0.049**	0.169	0.338	0.760	0.971	**0.027**	0.921	0.226	0.122	0.898	0.921	0.305	0.344	0.538	0.792	0.839	0.519	0.797	0.180	0.187
Type of family																																						
Nuclear	38	42	29	34	39	37	34	30	28	39	41	38	36	37	33	27	29	24	34	33	34	24	27	36	38	29	24	34	31	34	36	37	31	30	27	38	38	38
Joint	52	49	45	51	54	46	43	46	45	55	55	53	49	50	45	37	42	33	48	49	49	35	31	50	46	31	35	42	39	46	42	44	44	37	41	49	47	50
Chi-square	0.893	**0.007**	0.337	0.335	0.962	0.248	0.424	0.362	0.225	0.682	0.482	0.876	0.865	0.782	0.907	0.960	0.714	0.980	0.817	0.448	0.643	0.748	0.278	0.944	0.133	0.116	0.748	0.324	0.479	0.839	0.113	0.124	0.815	0.423	0.498	0.379	0.192	0.517
Place of Residence																																						
Urban	7	7	5	7	7	7	7	6	7	8	8	8	5	8	6	7	6	6	6	7	8	5	6	6	7	5	5	6	6	5	8	5	7	4	6	8	7	7
Rural	83	84	69	78	86	76	70	70	66	86	88	83	80	79	72	57	65	51	76	75	75	54	52	80	77	55	54	70	64	75	70	76	68	63	62	79	78	81
Chi-square	0.806	0.718	0.439	0.836	0.525	0.724	0.462	0.945	0.335	0.456	0.547	0.354	0.063	0.254	0.831	0.149	0.795	0.284	0.591	0.673	0.182	0.834	0.310	0.350	0.778	0.880	0.834	0.945	0.748	0.197	0.117	0.164	0.395	0.286	0.658	0.254	0.836	0.964
Education																																						
Illiterate	23	24	23	24	23	23	21	23	20	25	25	26	25	24	20	16	22	18	24	24	24	19	17	25	25	18	15	22	18	21	22	23	22	18	18	23	21	23
Primary	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Intermediate	19	19	16	16	18	14	13	11	12	18	18	17	14	15	14	14	10	11	14	13	13	9	9	14	12	10	8	12	14	15	15	14	12	13	11	17	15	17
Graduate	47	47	35	44	51	45	42	41	40	50	52	48	46	47	43	33	38	28	43	44	46	30	31	46	46	31	35	41	37	43	40	43	40	35	38	46	48	47
Chi-square	0.421	0.381	**0.028**	0.615	0.763	0.588	0.726	0.114	0.673	0.922	0.987	**0.005**	**0.018**	0.596	0.899	0.659	0.118	0.320	0.364	0.215	**0.023**	0.245	0.533	0.186	**0.026**	0.538	0.295	0.378	0.893	0.964	0.696	0.593	0.382	0.877	0.678	0.928	0.631	0.973
Occupation																																						
Senior officials	14	16	13	14	18	15	16	15	15	18	18	16	15	16	18	12	14	9	15	15	16	8	9	16	16	11	14	12	13	16	13	15	13	14	13	14	17	16
Healthcare Professionals	17	16	13	16	16	15	12	11	10	16	17	15	13	15	13	12	9	10	11	14	14	7	9	16	14	8	8	12	13	14	13	13	11	13	16	15	16	
Technicians	22	20	18	19	22	19	17	17	18	20	22	21	21	21	17	14	18	13	20	19	20	18	16	18	20	15	15	20	15	20	19	19	16	17	18	20	20	21
Clerks	3	3	2	3	3	3	3	3	3	3	3	3	4	2	1	2	3	2	3	3	3	1	2	2	1	2	2	1	2	2	3	2	2	0	2	3	2	3
Skilled workers	4	4	3	4	4	4	4	4	2	4	4	4	3	4	3	3	2	3	4	3	3	2	2	4	4	3	2	4	4	3	3	4	4	3	3	4	4	4
Agriculture	11	12	7	11	10	8	8	8	9	12	11	10	9	9	8	8	10	8	11	10	8	7	7	12	10	8	7	9	6	9	10	9	8	6	5	10	8	9
Craft and trade related	5	4	4	5	5	5	5	5	4	5	5	5	4	4	4	2	1	1	3	4	4	3	2	4	4	3	3	4	2	3	2	2	3	4	2	3	4	4
Plant and machine operators	4	4	4	5	4	2	5	4	4	5	5	5	5	4	4	4	3	4	5	3	4	3	2	5	4	3	1	3	4	3	4	5	4	3	2	5	5	4
Elementary occupation	5	5	5	4	5	5	3	4	4	5	5	5	5	5	5	3	5	3	5	5	5	4	4	5	5	4	3	5	5	5	5	5	5	4	5	5	4	5
Unemployed	5	7	4	5	6	7	4	5	4	6	6	7	7	7	5	4	6	4	5	6	6	6	5	4	6	4	4	5	7	5	6	7	5	5	5	7	6	6
Chi-square	0.404	0.817	0.756	0.756	0.643	0.132	0.288	0.606	0.580	0.634	0.890	0.824	0.540	0.730	0.233	0.982	**0.046**	0.801	0.192	0.920	0.813	0.211	0.812	0.240	0.478	0.881	0.541	0.632	0.130	0.710	0.542	0.209	0.801	0.316	0.255	0.498	0.626	0.878
Income																																						
<10k	20	21	16	20	22	17	19	18	15	22	22	20	20	22	18	15	14	14	20	19	19	15	13	21	21	14	14	20	17	19	18	20	17	18	17	21	20	20
10-30k	40	43	34	36	40	39	32	32	32	42	43	41	37	40	38	32	35	27	34	37	39	27	29	43	37	25	28	34	34	38	38	36	36	32	35	39	39	41
30-50k	16	16	14	15	17	16	14	13	12	17	17	17	14	11	9	8	11	8	15	13	13	7	9	11	12	10	7	10	8	12	10	12	12	6	7	14	12	14
50-75k	6	3	3	6	6	4	4	5	6	5	6	5	6	6	5	2	4	2	5	5	5	1	4	6	3	4	5	3	4	4	5	3	5	3	5	6	5	5
75-99k	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
>99k	6	6	5	6	6	5	6	6	6	6	6	6	6	6	6	5	5	4	6	6	5	3	4	5	6	4	5	6	6	5	6	6	5	4	4	6	6	6
Chi-square	0.677	**0.017**	0.627	0.325	0.131	0.617	0.285	0.450	0.300	0.306	0.454	0.591	0.464	**0.023**	0.110	0.208	0.777	0.522	0.272	0.740	0.954	0.296	0.279	**0.043**	0.153	0.250	0.533	0.239	0.090	0.742	0.239	0.405	0.671	**0.040**	0.100	0.600	0.307	0.859
Socioeconomic																																						
Upper	5	5	4	4	4	5	5	3	4	5	5	5	4	5	3	5	3	4	5	4	5	2	3	5	5	3	4	4	4	4	4	4	4	3	5	5	5	5
Upper middle	32	29	23	28	33	27	26	28	26	31	34	30	31	29	30	19	25	16	27	30	30	18	20	29	29	21	20	27	21	20	26	28	25	20	23	30	29	30
Lower middle	35	35	29	34	36	31	30	29	25	36	36	34	29	33	28	26	25	21	30	29	28	22	21	33	31	21	20	28	26	28	28	28	28	25	33	33	34	
Upper lower	15	18	14	15	16	16	13	13	14	18	17	18	17	16	13	10	15	12	16	15	16	13	10	15	15	11	12	13	15	15	16	17	14	12	11	16	15	15
Lower	3	4	4	4	4	4	3	3	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4
Chi-square	0.122	0.352	0.888	0.907	0.393	0.761	0.622	0.681	0.797	0.445	0.265	0.487	0.317	0.893	0.435	0.265	0.640	0.372	0.720	0.777	0.343	0.479	0.883	0.893	0.874	0.871	0.738	0.968	0.534	0.797	0.786	0.481	0.991	0.683	0.531	0.396	0.482	0.838
Information Resources																																						
Radio	12	11	10	12	14	11	14	13	12	14	14	13	12	14	12	10	13	9	13	12	11	10	8	13	13	10	7	8	9	9	10	11	11	10	10	13	12	11
Cancer	14	14	13	11	13	13	13	12	10	14	14	13	12	12	9	8	10	9	13	13	12	6	7	14	13	9	11	12	12	13	12	14	12	10	11	14	13	13
Internet	3	3	2	3	5	3	2	4	4	5	5	5	4	4	5	2	2	2	3	4	5	3	3	2	4	3	2	4	3	4	3	3	4	4	3	3	4	4
Television	28	28	24	26	27	26	21	21	23	28	28	29	28	25	26	21	24	17	26	27	28	19	19	27	24	19	20	26	22	26	25	25	25	21	23	26	27	29
Friends	12	12	5	11	11	11	8	8	8	11	12	10	11	11	6	6	6	5	6	8	8	7	7	10	11	5	4	10	7	9	10	8	8	8	7	11	10	10
Cinema	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	2	3	2	3	2	3	2	2	3	3	3	2	3	3	3	3	3	3	1	3	3	3	3
Newspaper	14	15	13	14	15	13	12	11	11	15	15	15	12	13	12	13	10	12	14	12	13	10	10	12	12	9	10	9	10	12	11	11	8	10	8	12	11	13
Social media	4	5	4	5	5	3	4	4	3	5	5	3	3	5	2	3	1	4	4	3	2	2	5	4	2	3	4	4	4	4	5	4	4	3	4	5	5	
Chi-square	0.204	**0.030**	**0.014**	0.600	0.788	0.453	0.111	0.680	0.955	0.288	0.881	0.075	0.622	0.935	**0.047**	0.294	0.145	0.259	**0.019**	0.462	0.129	0.842	0.950	**0.049**	0.953	0.555	0.228	0.190	0.543	0.358	Q/767	0.211	0.321	0.931	0.522	0.814	0.619	0.296

3.3. Knowledge on the patient rights

A significant association of age with rights of patient to know doctor's qualification, details pertaining to insurance, dignity towards healthcare providers and cash assistance to public health centres for providing health every year was seen. Association between gender and right to receive case paper upon request was significant. Association between religion with second opinion in case of any doubtful situation such as surgery or treatment prescribed and right to be informed in case of discharge or shifting to another hospital was seen. Significant association of marital status with awareness on village and health sanitation committee, awareness programme by village sanitation committee, right to receive feedback on treatment process and right to be informed in case of discharge or shifting to another hospital. Significant association between place of residence and informed consent from patient was seen. Education had significant association with awareness on village and health sanitation committee. Significant association of occupation with display of patient's right board, dignity towards healthcare providers, and awareness on

informed consent form was seen. Significant association of income and awareness of patient's rights on treatment, patient's rights in health system, rights of patient's to examine their bills, patient's rights to confidence, dignity of health care providers, awareness on ASHA workers, awareness on sub-centres providing facility for complicated cases and delivery, availability of iron, folic acid and other essential tablets and availability of doctors and nurses at sub-centres throughout the day. Association of socioeconomic status and patient's privacy, right to receive feedback on treatment process and second opinion in case of any doubtful situation such as surgery or treatment prescribed was significant. Significant association between information resources with rights of patient's to express his illness and presence of ANM during labour at fertility care centre. Table 3 presents the factors affecting the knowledge on patient rights.

Table 3: Factors affecting the knowledge on the Patient rights

Variables	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40
Age Chi-square	0.627	0.465	0.128	0.064	0.827	**0.022**	0.251	0.359	**0.000**	0.561	**0.046**	0.181	0.400	0.089	0.481	0.263	0.067	0.231	0.421	0.302	0.927	0.839	0.156	0.684	**0.027**	0.065	0.352	0.284	0.698	0.706	0.472	0.713	0.113	0.503	0.750	0.419	0.660	0.125	0.150	0.878
Gender Chi-square	0.867	0.993	0.859	0.975	0.783	0.616	0.974	0.836	0.485	0.653	0.326	0.755	0.144	0.356	0.470	0.672	0.311	0.871	0.776	0.283	0.598	0.216	0.211	0.451	0.186	0.825	0.848	0.501	0.766	0.483	0.648	0.144	0.805	0.597	0.215	**0.038**	0.415	0.888	0.550	0.525
BMI Chi-square	0.836	0.407	0.697	0.757	**0.036**	0.157	0.349	0.631	0.519	0.573	0.778	0.418	**0.035**	0.470	0.510	0.078	0.813	0.479	0.100	0.580	0.103	0.342	0.133	0.621	0.446	0.232	**0.049**	0.391	**0.043**	0.474	0.539	0.185	0.202	0.396	0.720	0.606	0.592	0.219	0.104	0.157
Smoking Chi-square	0.842	0.813	0.450	0.569	0.544	0.569	0.729	0.743	0.289	0.526	0.544	0.758	0.262	0.722	0.718	0.487	0.842	0.365	0.583	0.722	0.486	0.893	0.062	0.302	0.719	0.615	0.678	0.306	0.779	0.845	0.595	0.657	0.473	0.307	0.307	0.770	0.384	0.473	0.774	0.809
Alcoholic Chi-square	0.620	0.507	0.393	0.980	0.453	0.491	0.983	0.276	0.422	0.624	0.206	0.553	**0.039**	0.706	0.922	0.238	0.852	0.982	0.872	0.349	0.464	0.313	0.069	0.077	0.556	0.831	0.436	0.996	0.586	0.698	0.330	0.421	0.202	0.255	0.278	0.493	0.417	0.538	0.515	0.5066
Exercise Chi-square	0.751	0.757	0.881	0.764	0.357	0.680	0.311	0.387	0.307	0.342	0.392	0.566	0.757	0.929	0.743	0.902	0.629	0.490	0.581	0.243	0.348	0.273	0.126	**0.052**	0.438	0.323	0.611	0.484	0.308	0.192	0.818	0.881	0.785	0.584	0.466	0.551	0.968	0.137	0.153	0.695
Diet Chi-square	0.987	0.517	0.890	0.077	0.986	0.558	0.819	0.705	0.350	0.790	0.100	0.903	0.952	0.518	0.917	0.385	0.470	0.642	0.641	0.816	0.862	0.201	0.901	0.916	0.415	0.467	0.474	0.721	0.427	0.379	0.418	0.602	0.569	0.199	**0.045**	0.486	0.465	0.454	0.784	0.605
Religion Chi-square	0.647	0.795	0.679	0.180	0.372	0.761	0.614	0.833	0.548	0.307	0.745	0.874	0.828	0.841	0.519	0.696	0.708	0.614	0.377	0.167	0.118	0.118	0.787	0.515	0.183	0.265	0.199	0.614	0.712	0.063	0.777	0.663	**0.007**	0.537	0.741	0.679	0.430	**0.019**	0.597	0.583
Marital status Chi-square	0.904	0.579	0.578	0.573	0.176	0.302	0.564	0.295	0.561	0.130	0.511	0.998	0.362	0.477	0.351	0.893	0.697	0.482	0.834	0.981	0.963	0.376	0.688	0.434	0.628	**0.005**	0.419	**0.048**	0.736	**0.007**	0.071	0.173	0.191	0.306	0.673	0.644	0.274	**0.039**	0.965	0.587
Type of family Chi-square	0.266	0.465	0.745	0.177	0.393	0.348	0.440	0.750	0.718	0.448	0.246	0.597	0.781	0.985	0.830	0.611	0.612	0.587	0.834	0.739	0.919	0.601	0.963	0.391	0.724	0.883	0.235	0.877	0.713	0.670	0.342	0.907	0.838	0.365	0.481	0.962	0.822	0.860	0.750	0.159
Place of Residence Chi-square	0.680	0.378	0.378	0.705	0.278	0.464	0.616	0.511	0.531	0.588	0.437	0.685	**0.011**	0.550	0.416	0.361	0.727	0.253	0.614	0.368	0.489	0.310	0.677	0.934	0.541	0.071	0.116	0.181	0.407	0.588	0.493	0.580	0.319	0.200	0.649	0.450	0.343	0.086	0.626	0.337
Education Chi-square	0.845	0.728	0.287	0.434	0.989	0.598	0.878	0.846	0.749	0.203	0.319	0.556	0.625	0.188	0.448	0.348	0.545	0.318	0.531	0.408	0.182	0.216	0.286	0.510	0.801	**0.054**	0.707	0.345	0.503	0.345	0.372	0.072	0.916	0.903	0.742	0.724	0.999	0.964	0.062	0.722
Occupation Chi-square	0.599	0.079	0.074	0.625	0.110	0.219	0.220	0.149	0.704	**0.003**	**0.014**	0.327	**0.024**	0.202	0.513	0.166	0.819	0.665	0.287	0.806	0.177	0.183	0.365	0.608	0.747	0.338	0.868	0.767	0.806	0.107	0.707	0.098	0.643	0.859	0.526	0.543	0.467	0.661	0.426	0.874
Income Chi-square	**0.007**	**0.046**	0.086	0.314	**0.013**	0.082	**0.034**	0.154	0.267	0.110	**0.002**	**0.004**	**0.001**	0.210	0.094	**0.052**	**0.008**	0.121	0.567	0.222	0.232	0.244	0.503	0.513	0.490	0.782	0.773	0.966	0.095	0.555	0.881	0.129	0.229	0.974	0.133	0.071	**0.012**	0.241	0.684	0.673
Socioeconomic Chi-square	0.477	0.964	0.183	**0.049**	0.727	0.384	0.801	0.551	0.554	0.746	0.855	0.879	0.887	0.128	0.252	0.621	0.959	0.305	0.216	0.283	0.774	0.289	0.832	0.600	0.429	0.304	0.520	0.472	0.489	**0.029**	0.576	0.152	**0.059**	0.336	0.785	0.660	0.895	0.670	0.194	0.412
Information Resources Chi-square	0.751	0.618	**0.009**	0.138	0.637	0.945	0.658	0.986	0.616	0.825	0.893	0.681	0.800	0.759	0.880	0.547	0.997	0.229	**0.961**	0.598	0.836	0.687	0.925	0.389	0.785	0.537	0.213	0.876	0.357	0.790	0.937	0.554	0.511	0.466	0.530	0.128	0.881	0.124	0.782	0.074

3.4. The perception of HCPs on patient safety

A Significant association between age and feedback communication about error was seen, association between religion and communication openness, feedback or communication about error. Association between marital status and all demographics except work area involvement were significant. Type of family was found to be significantly associated with manager's expectation. Work area involvement was significantly associated with place of residence. Income of the people was significantly associated with communication openness and feedback. Socioeconomic class of the people is significantly associated with management support. Information support was found to be significantly associated with all demographics except management support. The factors affecting the perception of HCPs on the patient safety is presented in Table 4.

Table 4: Perception of HCPs Patient safety

Variables	Management support	Manager expectation	Non-punitive response to errors	Teamwork across unit	Communication openness	Feedback/ Communication about error	Work area Involvement	Overall patient safety
Age								
≤20 years	5	6	4	6	6	6	5	
21-30 years	46	45	46	53	51	42	24	
31-40 years	16	15	11	15	13	15	5	
41-50 years	5	6	5	6	5	6	3	
51-60 years	5	5	4	5	5	5	2	
>60 years	2	2	3	3	3	3	0	
Chi-square	0.184	0.176	0.762	0.648	0.863	**0.055**	0.332	0.529
Gender								
Male	33	35	33	39	34	34	18	
Female	46	44	40	49	49	43	21	
Chi-square	0.929	0.365	0.286	0.203	0.643	0.424	0.501	0.299
BMI								
Underweight	13	11	10	11	13	11	6	
Normal	43	44	41	49	44	41	23	
Overweight	19	20	17	23	21	20	10	
Obese	4	4	5	5	5	5	0	
Chi-square	0.875	0.952	0.468	0.243	0.674	0.589	0.334	0.175
Smoking								
Yes	6	5	6	5	5	4	2	
No	73	74	67	83	78	73	37	
Chi-square	0.193	0.788	0.124	0.717	0.982	0.535	0.769	0.573
Alcoholic								
Yes	9	8	9	9	8	8	6	
No	70	71	64	79	75	69	33	
Chi-square	0.368	0.935	0.202	0.837	0.790	0.812	0.151	0.137
Exercise								
Yes	22	21	22	25	23	20	10	
No	57	58	51	63	60	57	29	
Chi-square	0.622	0.301	0.680	0.724	0.530	0.222	0.554	0.673
Diet								
Veg	23	25	17	27	23	21	20	
Mixed	56	54	56	61	60	56	19	
Chi-square	0.708	0.486	**0.016**	0.687	0.270	0.276	**0.000**	**0.001**
Religion								
Hindu	75	74	68	84	80	75	36	
Muslim	4	5	5	4	3	2	3	
Chi-square	0.444	0.788	0.557	0.097	**0.026**	**0.009**	0.569	0.183
Marital status								
Married	55	50	48	54	53	53	18	
Unmarried	24	29	25	34	30	24	21	
Chi-square	**0.000**	**0.014**	**0.004**	**0.017**	**0.002**	**0.000**	0.080	**0.040**
Type of family								
Nuclear	44	51	44	51	48	43	22	
Joint	35	28	29	37	35	34	17	
Chi-square	0.609	**0.003**	0.277	0.602	0.711	0.669	0.924	0.232
Place of Residence								
Urban	6	6	6	6	6	6	0	
Rural	73	73	67	82	77	71	39	
Chi-square	0.193	0.193	0.124	0.351	0.253	0.167	**0.043**	0.119
Education								
Primary	26	24	15	19	20	18	10	
Intermediate	20	18	37	39	37	34	16	
Graduate	33	37	21	30	26	25	13	
Chi-square	0.452	0.756	0.156	0.128	0.981	0.844	0.815	0.624
Occupation								
Senior officials	6	5	6	6	6	5	3	
Healthcare	44	45	40	52	49	44	24	
Professionals	25	25	24	27	25	26	9	
Technicians	4	4	3	3	3	2	3	
Elementary occupation	0.189	0.251	0.205	0.392	0.727	0.087	0.427	0.162
Chi-square								
Income								
<10k	15	17	14	16	16	15	7	
10-30k	26	25	24	29	30	28	14	
30-50k	22	21	20	23	22	21	10	
50-75k	6	6	6	6	4	4	5	
75-99k	5	5	4	6	5	4	3	
>99k	2	3	3	3	3	3	0	
Chi-square	0.585	0.112	0.353	0.774	**0.038**	**0.045**	0.229	0.613
Socioeconomic								
Upper	2	4	2	4	5	3	1	
Upper middle	49	48	46	56	50	47	28	
Lower middle	18	18	17	19	19	19	7	
Upper lower	7	6	5	6	6	5	3	
Lower	3	3	3	3	3	3	0	
Chi-square	**0.027**	0.249	0.143	0.412	0.091	0.067	0.544	0.693
Information								
Resources	34	37	39	39	39	39	4	
Radio	3	3	1	3	3	3	3	
Grampanchth	6	5	8	9	9	7	7	
Internet	12	12	11	15	13	10	9	
Television	2	2	1	2	2	2	2	
Friends	2	1	1	2	1	1	1	
Cinema	7	5	4	5	6	6	1	
Newspaper	13	14	8	13	10	9	12	
Social media	0.072	**0.001**	**0.001**	**0.023**	**0.012**	**0.001**	**0.000**	**0.000**
Chi-square								

4. Discussion

Since the development of guidelines in 2005, India has raised it in an imperfect way where patients views, documentation on development process, collection, collation and updating of evidence with formulating recommendations are all not taken into consideration [12]. The present study discussed on awareness of NRHM and patient's rights among the rural population and the perception of HCPs on the patient safety and in a South Indian setting of Karnataka.

A study from coastal India reported that doctors, nurse's internet, posters, radio and television were the common source of information [13]. Most of the studies reported that patient's had low knowledge regarding their rights even with

boards displayed in hospitals, suggesting the requirement to educate patient's and healthcare professionals in this aspect [14]. Practice of safety culture by healthcare organizations should be such that adverse events are reported without any issues, doctors get opportunity to learn through their mistakesand prevent further errors.

Various surveys such as HSOPS questionnaire, SAQ (safety attitude questionnaire)., can be used to analyse safety culture measures, measuring patient safety grade and overall perception of patient safety (15). A study by Goyal RC et al reported "Feedback and communication about error" scoring to be around 48% which was possibly due to the fact of seldom practice by staff or unwilling , ineffective and inappropriate manner of feedback communication by staff [9]. Inspite of harsh responses to staff members regarding adverse events, it is the best to encourage and acknowledge them towards their contribution and knowledge sharing for safer conditions [16]. Kingkaew et al through his study in Myanmar reported a hike in antenatal care utilization along with delivery by skilled birth attendants after implementation of financial incentive scheme (Janani suraksha yojana) which was also a significant factor in our study [17].

A study by Kumbi B et al from Ethiopia reported revealed that there is differences in patient culture management within hospital like "organizational learning", "team work in each department", "feedback and communication", "staffing", "Patient safety perception", ""Support for patient safety from hospital management" and "teamwork and transitions" This was in line with our findings, which were similar.[5,18]. The inadequate awareness on various aspects may lead to poor economic expenditure on health and further leads to the self-medications. Self-medication is one of the major threat in India and need to be avoided [19, 20].

5. Conclusion

Though rural populations have adequate knowledge on NRHM, there is a need of adequate awareness on patient's rights through various programmes. HCPs have visionary perception on patient's safety which needs to be implemented in their practice.

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Authorship statement

Conception and design of study: Rajesh Venkataraman (RV), Renukaradhya Chitti (RC); **Acquisition of data**: RC; **Analysis and/or interpretation of data:**RV, RC; **Drafting the manuscript**: RC; **Clinical Inputs to the draft**: RV; **Revising the manuscript**: RC, RV; **Approval of the version of the manuscript to be published**: RC, RV

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All authors report no conflicts of interest to declare.

Data Availability Statement

The related to this work will be available from the corresponding author on appropriate request.

Ethical Committee statement

The Institutional Ethics Committee of the concerned institutions gave their permission. By explaining the goal of the research study to the NRHM department, the medical officer of the CHC, and the PHC village sarpanch, formal authorization was obtained. Before beginning the study, the respondents gave their informed consent.

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