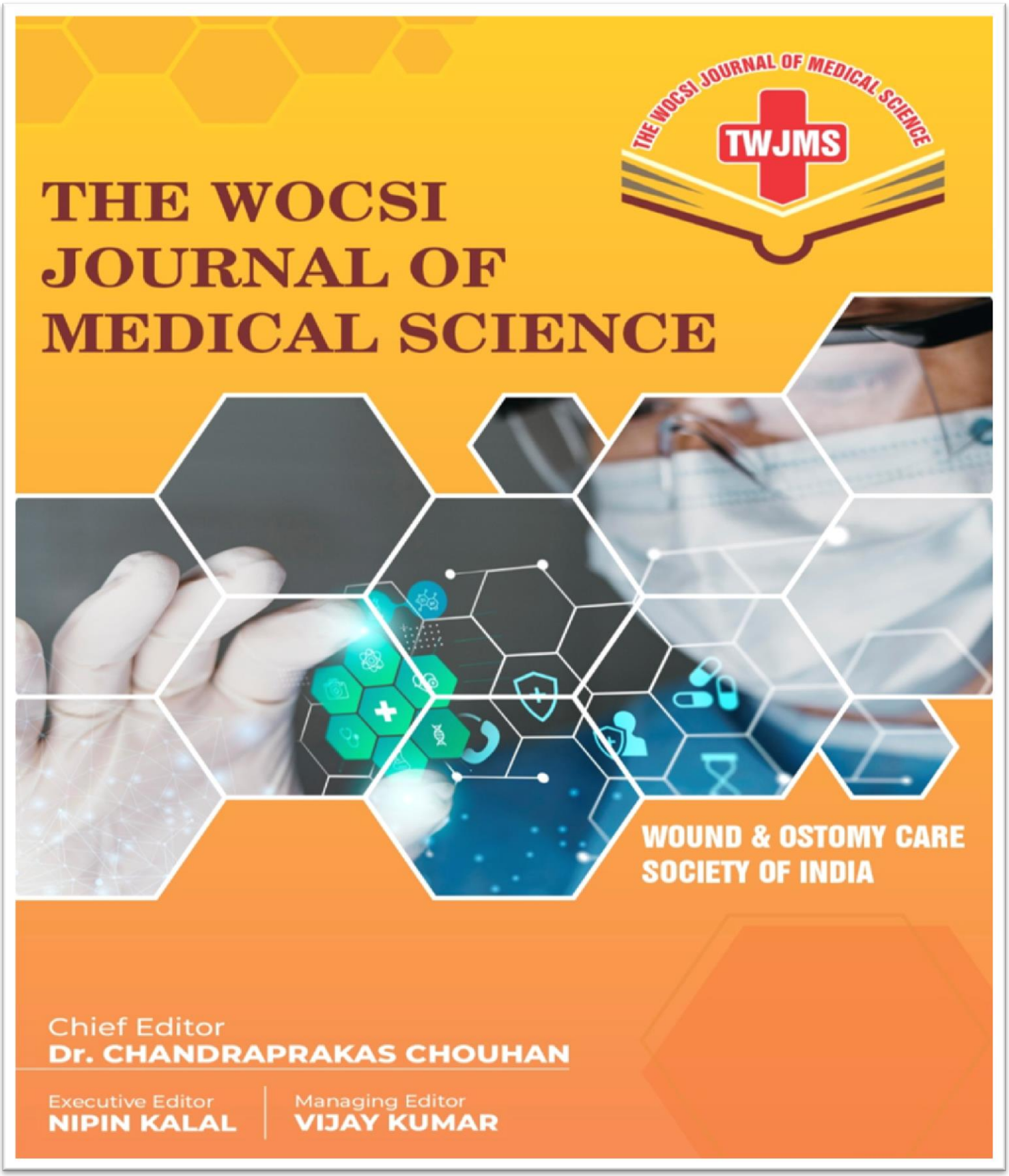
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To Development of Driver Sleep Detection and Alarming System to Prevent Road Traffic Accident

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Abstract:

Feeling sleepy while driving could cause a hazardous traffic accident. However, when driving alone on the highway or driving over a long period of time, drivers are inclined to feel bored and sleepy, or even fall asleep. Nowadays most of the products of driver anti-sleep detection sold in the market are simply earphone making intermittent noises, which is quite annoying, and few of the cars that are sold in the Indian market having sensors for auto braking system for the safety of the driver and the passengers are quite expensive for a Indian middle class person to afford and quite heavy on the pockets. As such, there is a high demand for cheap and efficient driver sleep detection. Therefore, we came up with an idea and successfully developed a sleepy detection and alarming system, which could effectively meet this demand.

Keywords : Road Traffic Accident, Driver Sleep Detection, Sleep Alarming System

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Introduction

The goal of this project is to develop a system that can accurately detect sleepy driving and make alarms accordingly, which aims to prevent the drivers from drowsy driving and create a safer driving environment[1-2]. The project was accomplished by a glass which is worn by the drivers constantly while driving, a sensor on the glass that always has a watch on the iris of the eye processing algorithm of sleepy detection[3], a feedback circuit that could generate an alarm and a power supply system and an ***Arduino and a relay motor*** [4].

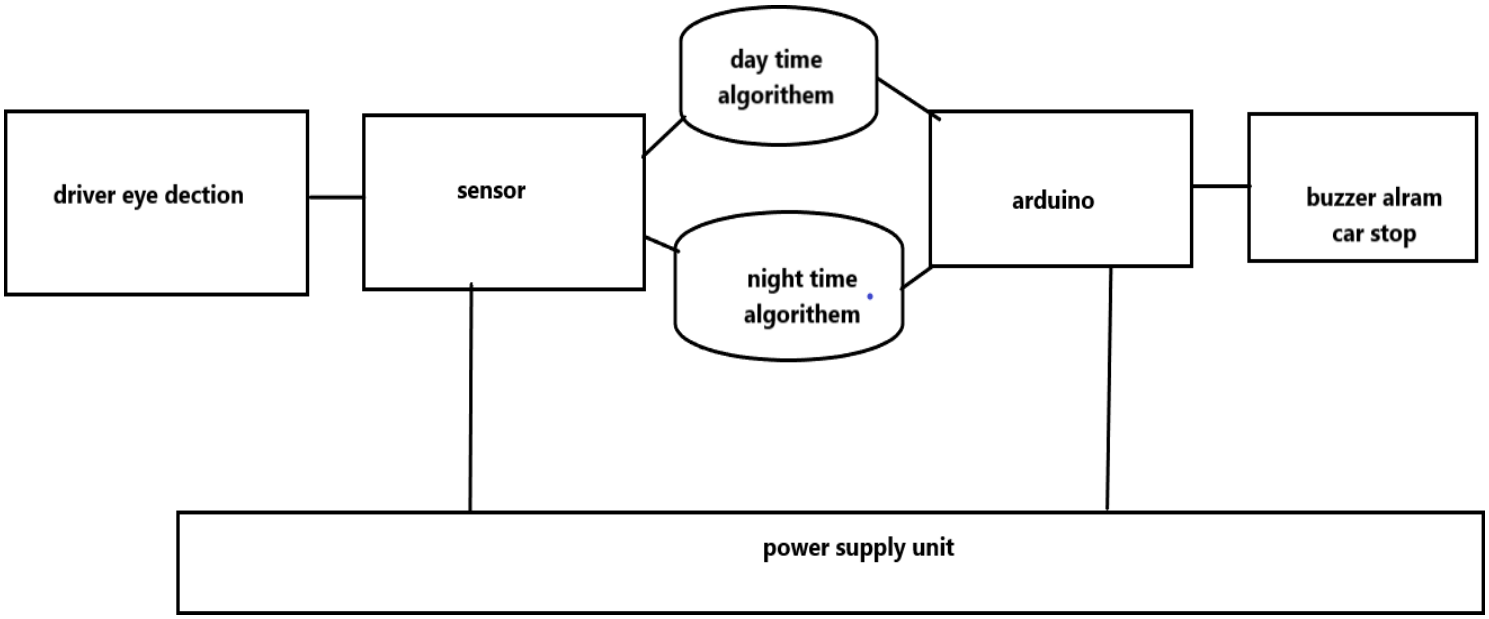

Figure 1. The systematic level block diagram

Design of Project

General design alternatives

The first alternative design between the final implementation and the initial plan, was the choice of the glasses. We desired to use the white glass shade instead of dark shade glass because of the late night time so that Driver can see in night without any shade barrier , because we have gone for the white shade glasses even the drivers who have a weak eyesight can choose these lens as their driving partner because mostly the power glasses have white shade , not only white shade glass help the driver to see in the night but also help us to get an accuracy of 97% in night time which is pretty much near to daytime accuracy that is 99% . The accuracy is pretty high. Another advantage of using a white shade glass is that they are much cheaper than the other shade glass.

A normal white shade glass will cost you around 100 rupees to anywhere around 1000 rupee. Another alternative is the adding of the battery. In order to meet the rigorous requirement of power supply of Arduino board[5], a lithium-ion battery is used intermediately[6]. This alternative solution makes the product more portable and sustainable since the Battery can be easily and constantly removed[7].We have also provided a charge socket to the battery which can be charged by a dc power converter which can be supplied by a cigarette power jack installed on the car, which turns this alternative into an advantage[8].

Simulation Circuits Schematic and Calculation

Cadence simulation of switching regular

The first stage simulation was done in Spice for the TI 61030 dc-dc regulator[9]. The recommended

inductor and capacitor value is calculated. Afterwards, due to the real application requirements, the design used both the TO 61030 boost dc-dc converter and TI 2679 buck dc-dc switching regulator in a later phase [9]. The figure shows the prime simulation for TI 610303 boost converter. There are tally 5 simulations finished and three of five are shown from figure 3 to figure5. The input power supply is changed from 1.8V to 5V to simulate the extreme conditions. A sinusoidal function generator is used to emulate the high frequency noise possible delivered from car charger inverter[10].

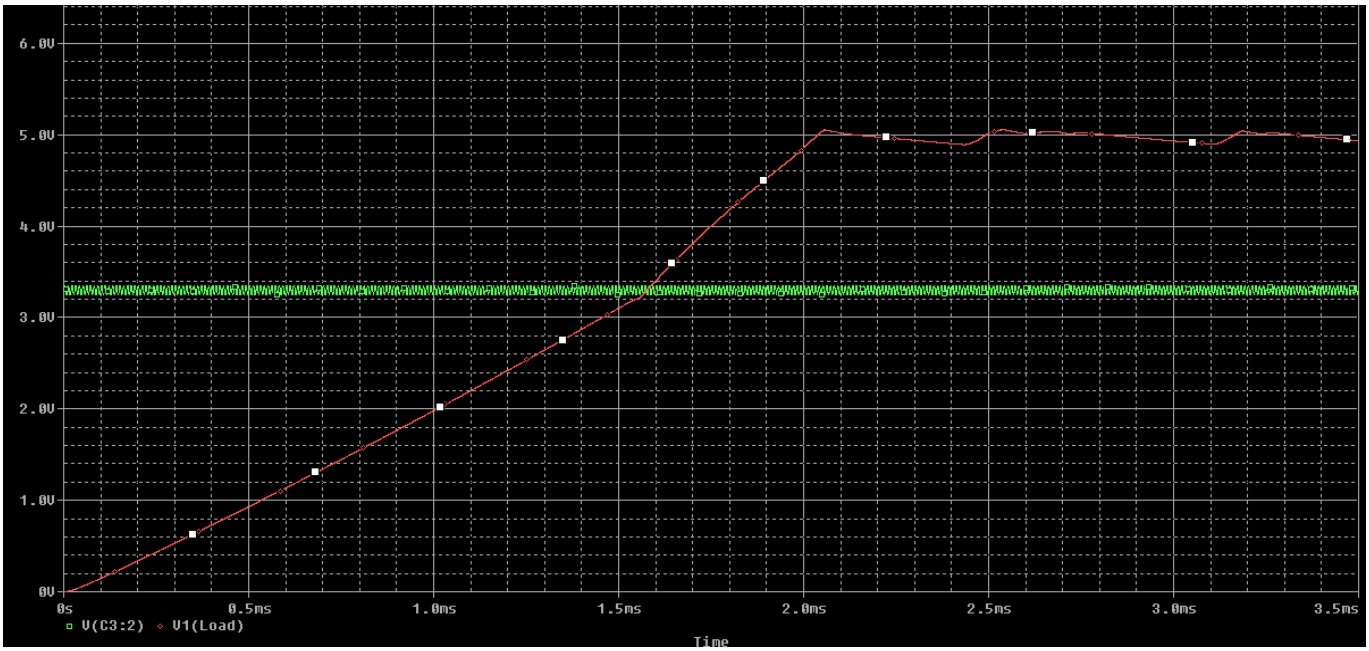

Figure 3.The voltage output (Red) while the input is at low value 3.3 V with small noise with magnitude 0.1 V (Green).

As the graphs show, the output from the chip can be stabled at 5V regardless of the noise and the input voltage value. Moreover, the noise of the signal is filtered apparently in the output. The simulation is conducted with a load approximated 10 W. The figure 6 and figure 7 shows the simulation circuit schematic for both TI 61030 and TI 2679-5.0 dc-dc switching regulators.

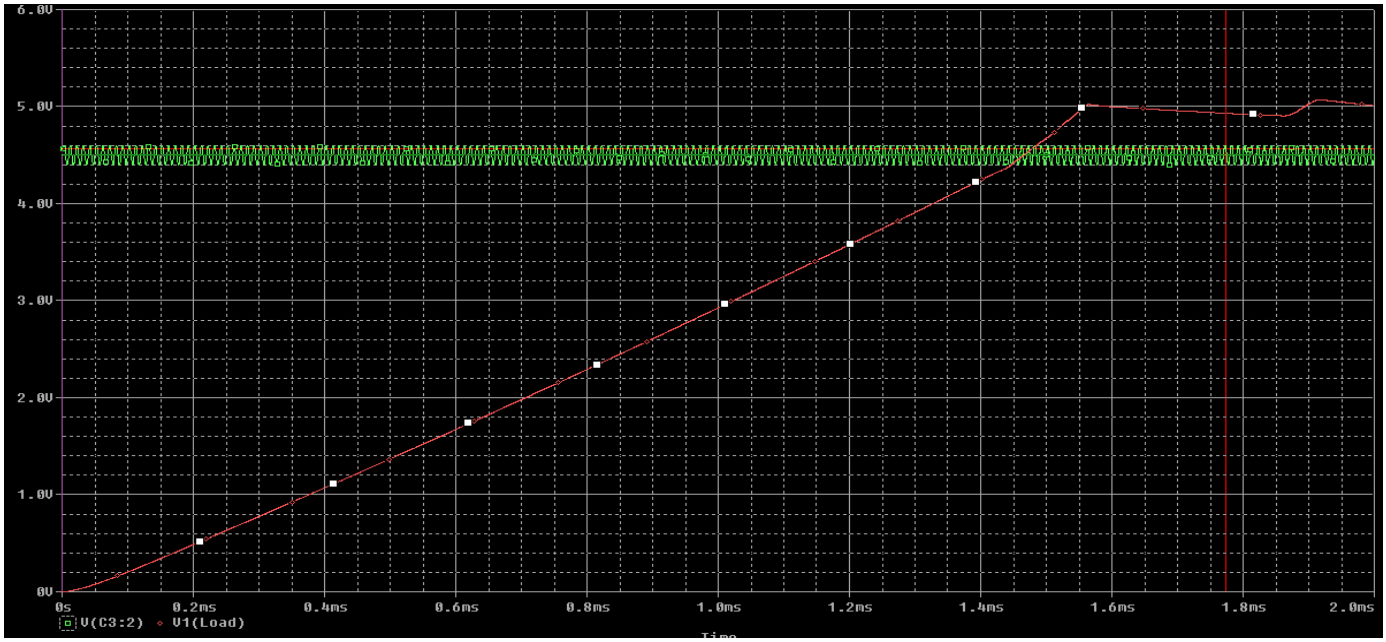

Figure 4.The voltage output (red) while the input is at low value 4.5 V with small noise with magnitude =0.1 V (Green).

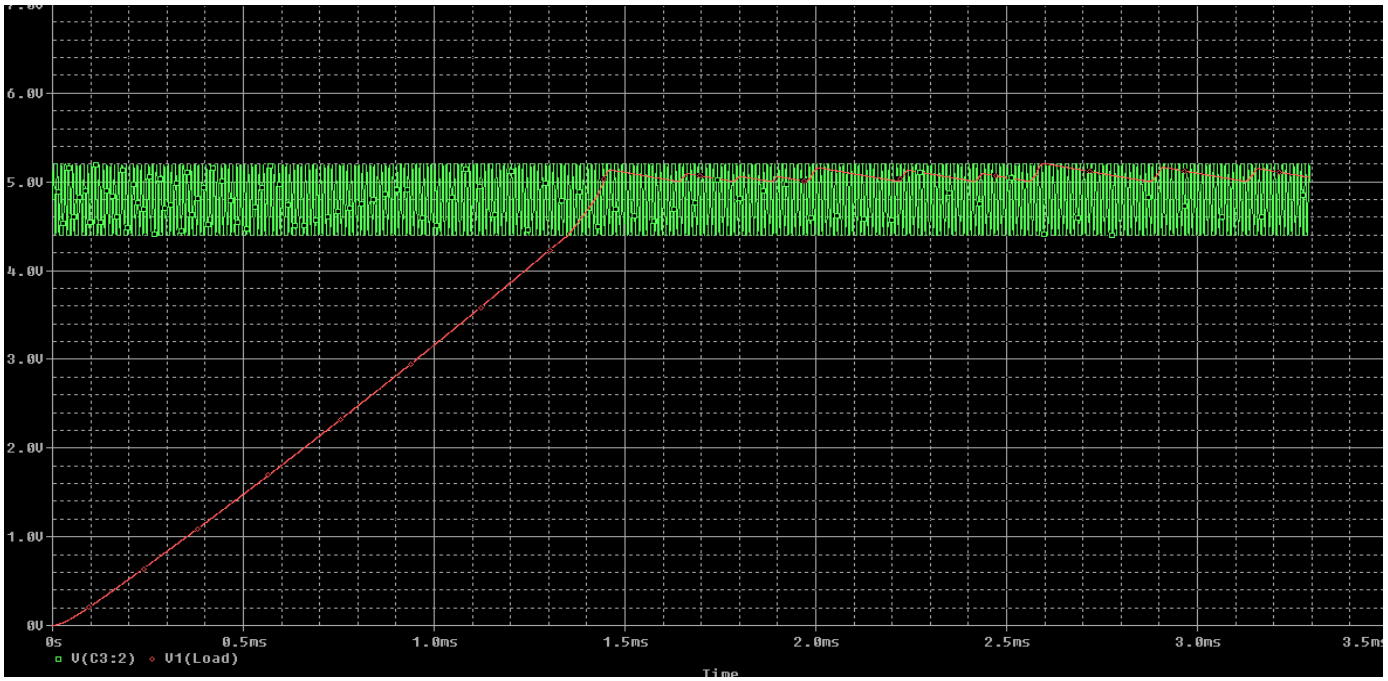

Figure 5.The voltage output (Red) while the input is at lowvalue 4.8 V with large noise with magnitude =0.5V (Green).

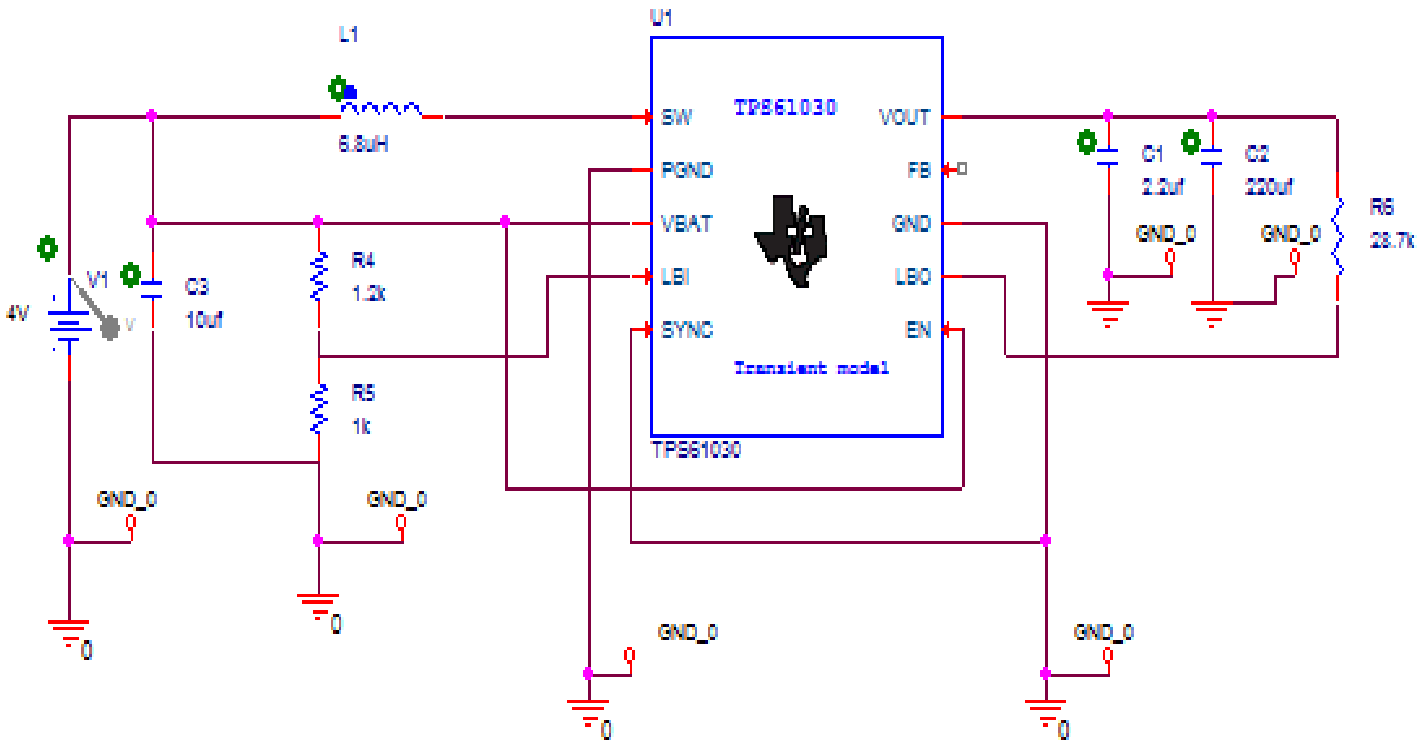

Figure 6--- Chip Spice simulation circuit

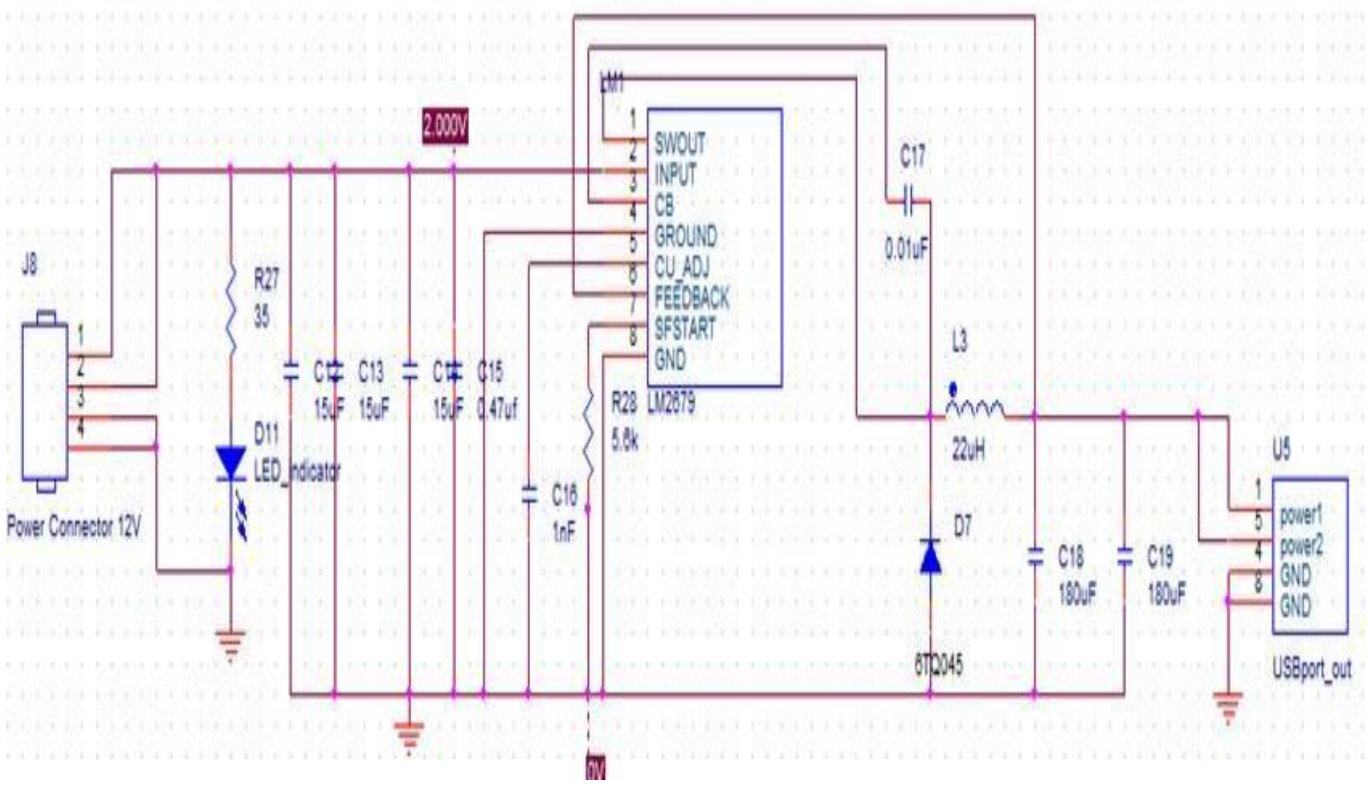

Figure7. Chip Cadence schematic design

2.1.1 Circuit parameters calculation

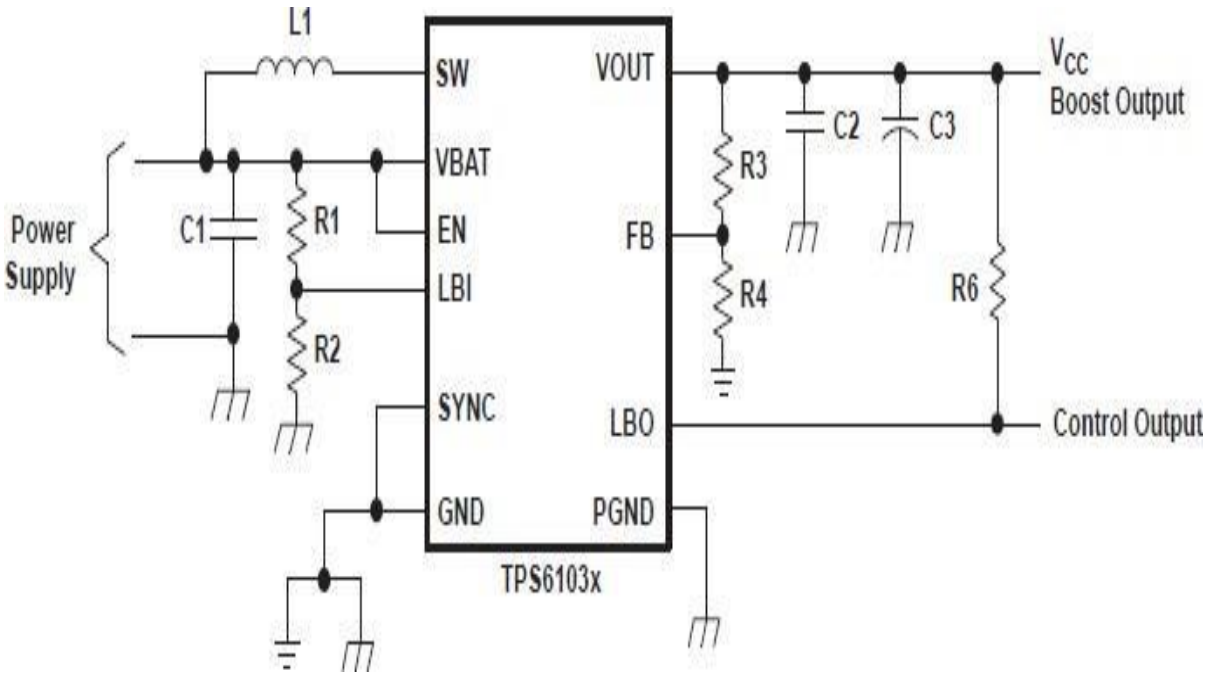

Figure 8.Recommended connection for 5V DC output

Flowchart and algorithm description

The algorithm aims to accurately detect the sleepiness of the driver by open eye and close eye recognition. The sleepy detection algorithm is built on C++and OpenCV libraries [11]. The test was first implemented and tested on the computer, then on the Arduino. The algorithm includes two parts: daytime detection and night detection. First and Foremost, based on the average intensity of sensor sensitivity, the algorithm classifies the environment as daytime or night. For daytime, the image quality is good enough, therefore no iris scan enhancement is required; for night, because of the poor lighting condition of the night, histogram equalization, a method to expand the color range of the image from 0 to 255, is implemented. In this case, we need a light that slightly illuminates the driver. In the next step, as soon as the driver has worn the glasses, two base scans are recorded automatically –open eye as well as close eye. These two scans are used as the base for further determination of whether the drivers' eye is open or closed. Afterwards, the driver could start driving. The detection algorithm is in real time and the eye portion is extracted by using the iterative Haar Classifier[12]. After the current eye portion is extracted, we use a template matching function built in OpenCV to determine if the eye is open or closed. If the eye has been closed for more than two seconds, sleepiness is detected and the program will send a signal to Arduino[13]. The detailed flow chart of the algorithm is shown below.

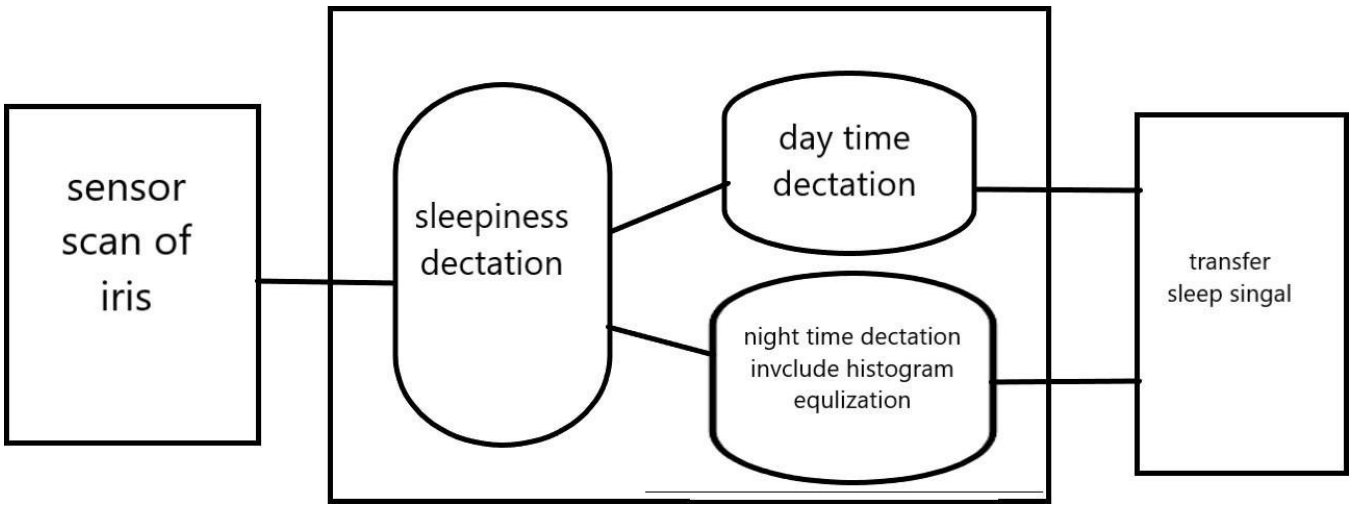

Figure 10. Framework of Algorithm

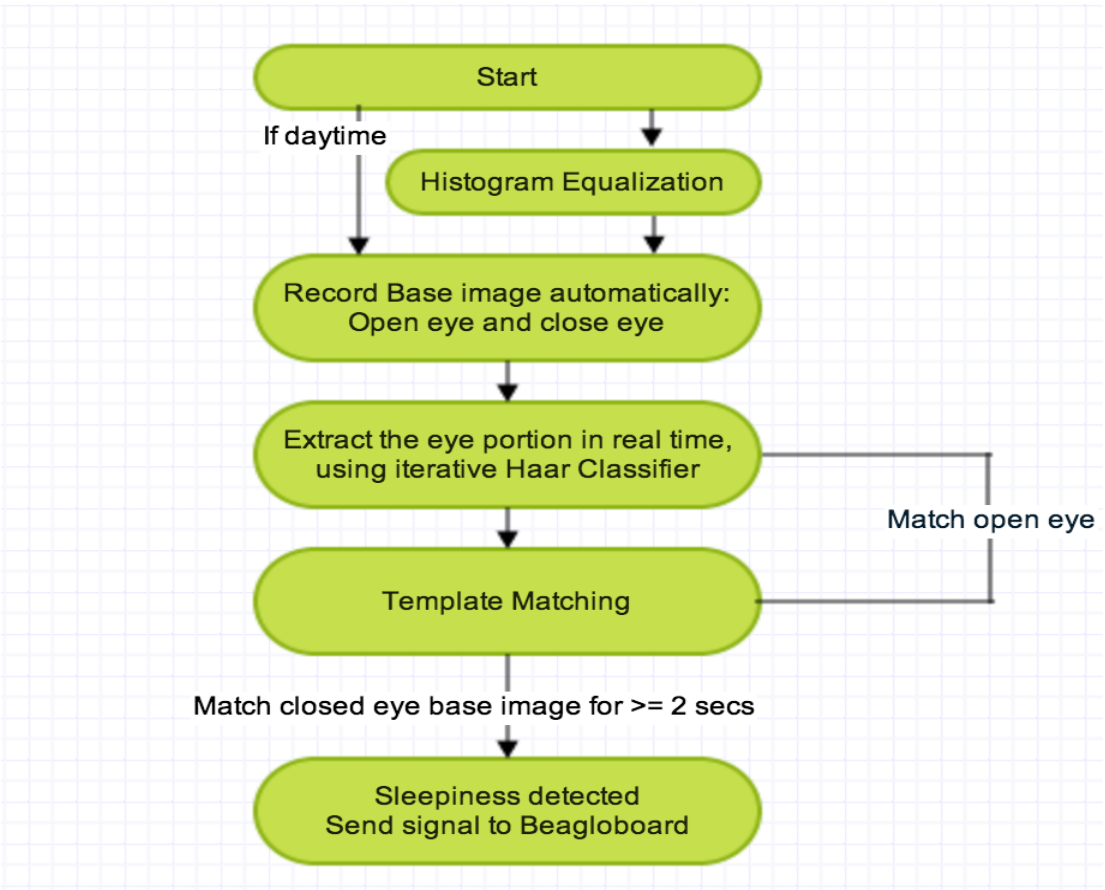

Figure 11. Flowchart for algorithm

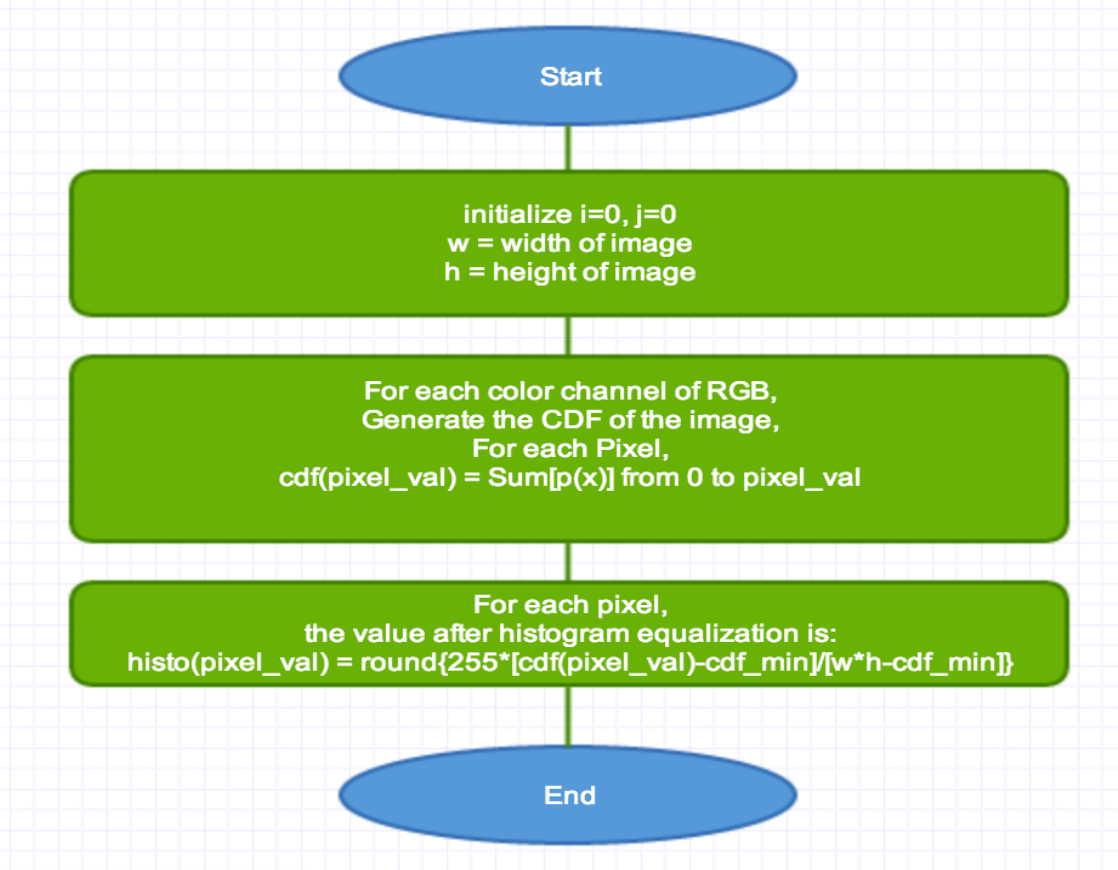

Figure 12. Flow chart for histogram equalization

Histogram Equalization:

The histogram Equalization is an image enhancement algorithm that could effectively expand the color contrast[14]. Due to the poor quality of contrast, this algorithm is specifically used for night detection. Traditional histogram equalization is implemented on black and white images; for our design, we used it for each channel of the images, which are R, G, and B. In detail, a cumulative distributive function of the image is generated and we get a statistical model, then we assign new value to each pixel so that the CDF can be more evenly distributed in the range from 0 to 255. The flow chart is shown below.

Discussion of results and performance

The software detection algorithm part is implemented successfully. The performance is fast, efficient and very accurate. The program can run smoothly on the computer in real time with no delays. In addition, we tested the algorithm 200 times, the accuracy achieved 93% in daytime and 82% at night, which is very high compared with the products sold on the market, for which the highest accuracy is 90%. As for the Arduino board, most of our requirements are satisfied. The Average time of a main loop is less than 0.33 second, which gives us a scanning frequency of 3Hz. GPIO pins are able to output a signal of 1.788V to 1.835V. Button press is able to send a ground signal through GPIO pin to start the process of scanning[15]. Besides, we made a few changes regarding the original description. First, we

take a white shade glass which is much less expensive. And we are still able to achieve the 3Hz scanning rate as in the requirement. Second, we made a button press to send a ground signal instead of a 1.8V signal because we later found out that the GPIO pin is active-low. And we are still able to identify a button press and scan correctly.

Conclusion

As for the software part, we fulfilled our goal successfully. The detection algorithm could not only work effectively and accurately at daytime, but also at night. The Eye portion extraction is smooth and in real time with no delays on the computer. In addition, there is a bonus function in the software part –detection with glasses. For the ARDUINO, we achieved two major difficulties. First, we were not able to power up the board with any commercial chargers initially, including the ones for iPhone, for Assume, or the USB charger on the car. But later we added a LITHIUM-ION battery to power our board and used the power supply we designed to charge the battery to solve the problem. Second, we experienced a few difficulties while installing the Open CV library on ARDUINO, but were able to solve it by changing flags in make files to the one corresponding to ARM board architecture. The power supply unit basically completes all its design requirements. By adding the extra battery stage, the problem of powering the entire microcontroller and alarming system has been solved. Moreover, the alarming system works as we supposed. The voltage ripple of the power supply unit can be mitigated by applying more resilient capacitor components.

It is apparent that the overall project success is not derived from one team member's mind but the keen coloration within our group. Each part is indispensable and every team member made great dedication on the completion of this design project. The pace is intense, the learning, immense.

Source of funding: Self Funded **Interest of conflict: Nil**

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Psychological Concerns Individuals With Hereditary Cancer and Their Immediate Family Members Seeking Medical Care At A Tertiary Care Hospital In India

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Abstract:

Introduction: Cancer susceptibility is more prevalent in individuals with a familial background. However, on a national level, the field of clinical genetic services and the psychological effects of suspected familial cancer on patients and their relatives is still emerging. Furthermore, it is uncertain whether genetic testing and counseling (GTC) can effectively address the common psychological challenges linked to cancer.

Purpose: The objective of this research endeavor was to examine the correlation between GTC (Genetic Testing and Counseling) and psychological concerns such as anxiety, depression, and distress among individuals with hereditary cancers and their immediate family members.

Methods: This preliminary study involved the participation of 100 patients who visited the GTC center at the All India Institute of Medical Sciences, along with their relatives. Demographic information was collected at the beginning and after undergoing GTC, and validated questionnaires were utilized to assess the psychological issues of interest. Generalized estimating equations, which accounted for clustering within individuals, were employed to analyze the association between GTC and the three psychological concerns.

Results: Out of the total participants, 96 were female patients, with 60% having breast cancer and 26% having ovarian cancer. Among the patients, the odds of experiencing anxiety, depression, and distress were found to be lower after undergoing GTC, when compared to before. These findings were statistically significant for distress (OR: 0.37; 95% CI: 0.21, 0.68). Although not statistically significant, GTC led to a 40% reduction in distress among the relatives (0.60; 0.29, 1.24).

Conclusions: Our results offer preliminary evidence supporting the potential protective effect of GTC in reducing psychological distress related to hereditary cancers among both patients and their immediate family members. We recommend conducting a larger longitudinal study in the future to further investigate these associations and confirm our findings.

Keywords: hereditary cancer, psychological issues, patients, relatives

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INTRODUCTION

Cancer, a group of diseases characterized by the uncontrolled growth and spread of abnormal cells, is responsible for one in seven deaths worldwide. In low- and middle-income countries, it ranks as the third leading cause of death after cardiovascular diseases, infectious diseases, and parasitic diseases. It has been established that individuals with a family history of cancer are more susceptible to developing the disease. While some familial cancers are a result of a combination of genetic and environmental factors, others are solely caused by inherited genetic mutations[1-2]. These inherited genetic mutations play a significant role in approximately 5 to 10 percent of all cancer cases. Over the past decade, various hereditary cancer syndromes have been identified, including familial adenomatous polyposis, hereditary breast and ovarian cancer syndrome (due to BRCA1/2 mutations), hereditary non-polyposis colorectal cancer, and Li Fraumeni syndrome [3]. Anxiety and depression are common psychological issues among cancer patients and their relatives, with a prevalence of around 50%. These symptoms have a negative impact on the lives of both patients and their families[4]. Relatives often experience severe emotional distress, significant fatigue, sleep disturbances, and difficulty maintaining focus and energy throughout the cancer treatment process. Many of these symptoms are indicative of depression [5]. In 2012, there were 14.1 million new cancer cases reported worldwide, excluding non-melanoma skin cancers. Of these cases, 57% (8 million) occurred in economically developing countries. India alone reported over 1 million new cancer cases annually. Additionally, an estimated 600,000-700,000 cancer-related deaths were recorded in the same year[6]. As of 2018, there were approximately 18 million cancer cases globally, with lung and breast cancer being the most common types, including hereditary forms[7]. Despite this, clinical genetic services and the psychological impact of suspected familial cancer on patients and relatives are still emerging fields with limited development[8]. The level of understanding regarding genetic risk-related information remains uncertain due to the complexities involved in communication. Consequently, it is also unclear whether genetic counseling can effectively address psychological issues such as anxiety, depression, and distress[9]. In order to bridge this gap, we have established a center at the All India Institute of Medical Sciences (AIIMS), the country's leading medical institute. This center collaborates with Oncology OPDs to receive referrals from patients. The purpose of this paper is to examine the impact of a familial cancer diagnosis or suspicion on the psychological well-being of patients and their family members.

METHODS

Sample and setting: The study sample consisted of patients with hereditary type of cancers and their first degree relatives. The study participants were primarily enrolled either referred to the newly established GTC center at AIIMS, by the treating physician. Some participants were enrolled after they visited the center after finding about it from the pamphlets placed within AIIMS. To be eligible to participate, the participants had to be at least 18 years of age and provide informed consent to enroll in the study. Those with previous history of mental health disorders were excluded from this study. The intended sample size for this pilot project was 100 patients and relatives each. This was based on the estimates produced by previous research efforts. This effort was able to enroll 100 patients and 52 first degree relatives in the final study sample.

Variables: At baseline, demographic, and cancer and its treatment-related information

(name, age, gender, religion, marital status, education, occupation, residential address, cancer type, and cancer-treatment related information) was obtained. The psychological issues of interest i.e. anxiety, depression, and distress were respectively assessed using three pre-validated questionnaires i.e. Generalized Anxiety Disorder (GAD)-7[10], Patient Health Questionnaire (PHQ)-9[11], and Distress Thermometer (DT) [12], each of which obtained information on a Likert scale. Post-counselling, the psychological issues were re-assessed after one month using the same tools. Anxiety and depression were eventually coded as 'no' if the levels reported were less than five and 'yes' if these were equal to or greater than five. Distress was coded as 'no' if it lied between zero and three and 'yes' if it was equal to four or greater. This was done because of the low cell counts.

Analysis: Descriptive statistics (frequencies and percentages) for the study exposures within each of the outcomes of interest are provided. The crude and multivariable analysis compared the outcomes of interest in the post-counselling phase as compared to pre-counselling. The multivariable models were adjusted for cancer type and age. Generalized estimating equations accounting for within-person clustering and with independent working correlation matrix were used. Note that for the regression models, the analyses were only limited to the two hereditary cancers i.e. breast and ovary. All analyses were conducted in SAS statistical software[13].

RESULTS

Table 1: Frequencies and proportions of patients across demographic and cancer-related characteristics by the psychological outcomes of interest (n=100)

Table 1 shows the respective proportion of participants with the psychological issues of interest before and after counselling for each of the study characteristics. In general, as compared to the respective proportion before, after counselling the proportion of adults with the psychological issues i.e. anxiety, depression, and distress were lower. However, the proportions varied by the characteristic under consideration as shown in Table 1.

Table 2 shows that among the 52 first degree relatives, again, in general we observed a reduction in the proportion of respondents who had the psychological issues after counselling as compared to the proportion who had the former before counselling. For example,among those with anxiety before counselling, 43%, while post counselling, the proportion of females with anxiety was 36%. On the other hand, among those with anxiety in the pre and post-counselling phase respectively, 57% and 64% were males. The proportions also varied by cancer type with those with accompanying a patient with breast cancer having lower proportion of psychological issues after counselling and those with ovarian cancer having higher proportions.

Chi-squared tests revealed that overall, there was a significant difference in the outcomes between and pre- and post-genetic counselling proportions ($P<0.05$) among patients. Among relatives, there was significant difference among the former for depression and distress, but not anxiety ($p=0.06$).

Characteristics	Pre-test anxiety		Post-test anxiety		Pre-test depression		Post-test depression		Pre-test DT		Post-test DT	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Gender												
Female	24 (92.3)	72 (97.3)	30 (88.2)	59 (100.0)	23 (95.8)	73 (96.1)	32 (88.9)	57 (100.0)	18 (90.0)	78 (97.5)	36 (92.3)	53 (98.2)
Male	2 (7.7)	2 (2.7)	4 (11.8)	0 (0.0)	1 (4.2)	3 (4.0)	4 (11.1)	0 (0.0)	2 (10.0)	2 (2.5)	3 (7.7)	1 (1.9)
Religion												
Hindu	20 (76.9)	64 (86.5)	28 (82.4)	50 (84.8)	19 (79.2)	65 (85.5)	29 (80.6)	49 (86.0)	16 (80.0)	68 (85.0)	34 (87.2)	44 (81.4)
Others	6 (23.1)	9 (12.2)	6 (17.6)	8 (13.6)	5 (20.8)	10 (13.2)	7 (19.4)	7 (12.3)	4 (20.0)	11 (13.8)	5 (12.8)	9 (16.7)
Marital status												
Married	21 (80.8)	65 (89.0)	21 (80.8)	65 (87.8)	20 (83.3)	66 (86.8)	30 (83.3)	50 (87.7)	17 (85.0)	69 (86.3)	34 (87.2)	46 (85.2)
Unmarried/divorced/widower	5 (19.2)	8 (10.8)	5 (14.7)	8 (13.6)	4 (16.7)	9 (11.8)	6 (16.7)	6 (10.5)	3 (15.0)	10 (12.5)	5 (12.8)	7 (13.0)
Education												
High school or less	11 (42.3)	46 (62.2)	15 (44.1)	35 (59.3)	11 (45.8)	46 (60.5)	16 (44.4)	34 (59.6)	9 (45.0)	48 (60.0)	20 (51.3)	30 (55.6)
Graduate	7 (26.9)	14 (18.9)	11 (32.4)	10 (17.0)	6 (25.0)	15 (19.7)	11 (30.6)	10 (17.5)	5 (25.0)	16 (20.0)	8 (20.5)	13 (24.1)
Post-graduate	8 (30.8)	14 (18.9)	8 (23.5)	14 (23.7)	7 (29.2)	15 (19.7)	9 (25.0)	13 (22.8)	6 (30.0)	16 (20.0)	11 (28.2)	11 (20.4)
Occupation												
Professional/ Business	4 (15.4)	5 (6.7)	4 (11.8)	5 (8.5)	3 (12.5)	6 (7.9)	4 (11.1)	5 (8.8)	3 (15.0)	6 (7.5)	4 (10.3)	5 (9.3)

Unskilled/field worker	5 (19.2)	9 (12.2)	6 (17.7)	8 (13.6)	4 (16.7)	10 (13.2)	6 (16.7)	8 (14.0)	5 (25.0)	9 (11.3)	4 (10.3)	10 (18.5)
Housewife	16 (61.5)	58 (78.4)	22 (64.7)	45 (76.3)	16 (16.7)	58 (76.3)	24 (66.7)	43 (75.4)	12 (60.0)	62 (77.5)	29 (74.3)	38 (70.4)
Retired/unemployed/student	1 (3.9)	2 (2.7)	2 (5.9)	1 (1.7)	1 (4.2)	2 (2.6)	2 (5.6)	1 (1.8)	0 (0.0)	3 (3.8)	2 (4.8)	1 (2.0)
Residential location												
Rural	7 (26.9)	30 (40.5)	5 (14.7)	9 (26.5)	8 (33.3)	29 (38.2)	12 (33.3)	21 (38.2)	5 (25.0)	32 (40.0)	14 (35.9)	19 (35.2)
Urban	19 (73.1)	42 (56.8)	25 (73.5)	25 (73.5)	16 (66.7)	45 (59.2)	24 (66.7)	34 (61.8)	15 (75.0)	46 (57.5)	24 (61.5)	34 (63.0)
Cancer specific characteristics												
Cancer type												
Breast	12 (46.2)	48 (64.9)	14 (41.2)	41 (64.5)	11 (45.8)	49 (64.5)	14 (38.9)	41 (71.9)	8 (40.0)	52 (65.0)	19 (48.7)	36 (66.7)
Ovary	10 (38.5)	16 (21.6)	7 (20.6)	17 (1.7)	7 (29.2)	19 (25.0)	9 (25.0)	15 (26.3)	6 (30.0)	20 (25.0)	8 (20.5)	16 (29.6)
Others	4 (15.4)	10 (13.5)	13 (38.2)	17 (28.8)	6 (25.0)	8 (10.5)	13 (36.1)	1 (1.8)	6 (30.0)	8 (10.0)	12 (30.8)	2 (3.7)
Illness duration												
Upto 1 year	8 (30.8)	18 (24.3)	9 (26.5)	15 (25.5)	11 (45.8)	15 (19.7)	11 (30.6)	13 (22.8)	6 (30.0)	20 (25.0)	11 (28.2)	13 (24.1)
More than 1 year	18 (69.2)	56 (75.7)	25 (73.5)	44 (74.6)	13 (54.2)	61 (80.3)	25 (69.4)	44 (77.2)	14 (70.0)	60 (75.0)	28 (71.8)	41 (75.9)
Treatment duration												
Upto 1 year	8 (30.8)	18 (24.3)	9 (26.5)	15 (25.4)	11 (45.8)	15 (19.7)	11 (30.6)	13 (22.8)	6 (30.0)	20 (25.0)	11 (28.2)	13 (24.1)
More than 1 year	18 (69.2)	56 (75.7)	25 (73.5)	44 (75.6)	13 (54.2)	61 (80.3)	25 (69.4)	44 (77.2)	14 (70.0)	60 (75.0)	28 (71.8)	41 (75.9)
Clinical approach												
0	1 (3.9)	4	5 (14.7)	0	2	3	5	0	2 (10.0)	3	5 (12.8)	0

		(5.4)		(0.0)	(8.3)	(4.0)	(13.9)	(0.0)		(3.8)		(0.0)
1	25 (96.2)	67 (90.5)	29 (85.3)	56 (94.9)	22 (91.7)	70 (92.1)	31 (86.1)	54 (94.7)	18 (90.0)	74 (92.5)	33 (84.6)	52 (96.3)
Total	26	74	34	59	24	76	36	57	20	80	39	54
Missing values are not shown												

Table 2: Frequencies and proportions of first degree relatives across demographic and cancer-related characteristics by the psychological outcomes of interest (n=52)

	Psychological outcomes of interest n(column %)											
	Pre-test anxiety		**Post-test anxiety**		**Pre-test depression**		**Post-test depression**		**Pre-test DT**		**Post-test DT**	
Characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Gender												
Female	4 (26.7)	16 (43.2)	10 (41.7)	10 (35.7)	6 (31.6)	14 (42.2)	9 (36.0)	11 (40.7)	7 (25.0)	13 (54.2)	15 (37.5)	5 (41.7)
Male	11 (73.3)	21 (56.8)	14 (58.3)	18 (64.3)	13 (68.4)	19 (57.6)	16 (64.0)	16 (59.3)	21 (75.0)	11 (45.8)	25 (62.5)	7 (58.3)
Religion												
Hindu	11 (73.3)	29 (78.4)	18 (75.0)	22 (78.6)	14 (73.4)	26 (78.8)	20 (80.0)	20 (74.1)	21 (75.0)	19 (79.2)	31 (77.5)	9 (75.0)
Others	4 (26.7)	8 (21.6)	6 (25.0)	6 (21.4)	5 (26.3)	7 (21.2)	5 (20.0)	7 (25.9)	7 (25.0)	5 (20.8)	9 (22.5)	3 (25.0)
Marital status												
Married	7 (46.7)	19 (51.4)	16 (66.7)	10 (35.7)	8 (42.1)	18 (54.6)	11 (44.0)	15 (55.6)	13 (46.4)	13 (54.2)	20 (50.0)	6 (50.0)
Unmarried/divorced	8 (53.3)	18 (48.7)	8 (33.3)	18 (64.3)	11 (57.9)	15 (45.5)	14 (56.0)	12 (44.4)	15 (53.6)	11 (45.8)	20 (50.0)	6 (50.0)

Education												
High school or lower	2 (13.3)	7 (18.9)	4 (16.7)	5 (17.9)	4 (21.1)	5 (15.2)	3 (12.0)	6 (22.2)	2 (7.1)	7 (29.2)	4 (10.0)	5 (41.7)
Graduate	8 (53.3)	22 (59.5)	14 (58.3)	16 (57.1)	9 (47.4)	21 (63.6)	17 (68.0)	13 (48.2)	17 (60.7)	13 (54.2)	25 (62.5)	5 (41.7)
Post-graduate	5 (33.3)	8 (21.6)	6 (25.0)	7 (21.2)	5 (20.0)	8 (29.6)	9 (32.1)	4 (16.7)	11 (27.5)	2 (16.7)	11 (27.5)	2 (16.7)
Occupation												
Professional/ Business	2 (13.3)	9 (24.3)	5 (20.8)	6 (21.4)	3 (15.8)	8 (24.2)	4 (16.0)	7 (25.9)	6 (21.4)	5 (20.8)	10 (25.0)	1 (8.3)
Unskilled/field worker	6 (40.0)	9 (24.3)	6 (25.0)	9 (32.1)	6 (31.6)	9 (27.3)	9 (36.0)	6 (22.2)	10 (35.7)	5 (20.8)	10 (25.0)	5 (41.7)
Housewife	1 (6.7)	7 (18.9)	4 (16.7)	4 (14.3)	3 (15.8)	5 (15.2)	3 (12.0)	5 (18.5)	2 (7.1)	2 (25.0)	5 (12.5)	3 (25.0)
Retired/unemployed/student	6 (40.0)	12 (32.4)	9 (37.5)	9 (32.1)	7 (36.8)	11 (33.3)	9 (36.0)	9 (33.3)	10 (35.7)	8 (3.3)	15 (37.5)	3 (25.0)
Residential location												
Rural	4 (26.7)	14 (37.8)	5 (20.8)	13 (46.4)	6 (31.6)	12 (36.4)	7 (28.0)	11 (40.7)	6 (21.4)	12 (50.0)	12 (30.0)	6 (50.0)
Urban	11 (73.3)	23 (62.3)	19 (79.2)	15 (53.6)	13 (68.4)	21 (63.6)	18 (72.0)	16 (59.3)	22 (78.6)	12 (50.0)	28 (70.0)	6 (50.0)
Cancer specific characteristics												
Cancer type												
Breast	7 (46.7)	14 (37.8)	14 (58.3)	7 (25.0)	11 (57.9)	10 (30.3)	13 (52.0)	8 (29.6)	14 (50.0)	7 (29.2)	17 (42.5)	4 (33.3)
Ovary	5 (33.3)	3 (8.1)	2 (8.3)	6 (21.4)	4 (21.1)	4 (12.1)	2 (8.0)	6 (22.2)	5 (17.9)	3 (12.5)	5 (12.5)	3 (25.0)
Others	3 (20.0)	20 (54.1)	8 (33.3)	15 (53.6)	4 (21.1)	19 (57.6)	10 (40.0)	13 (48.2)	9 (32.1)	14 (58.3)	18 (45.0)	5 (41.7)
Total	15	37	24	28	19	33	25	27	28	24	40	12
Missing values are not shown												

Table 3: Association between pre genetic counselling and post counselling scores, controlling for cancer type and age

Exposures	Anxiety		Depression		Distress	
	OR	95% CI	OR	95% CI	OR	95% CI
Patients						
Crude	0.95	0.62, 1.46	0.64	0.39, 1.07	0.37	0.21, 0.68
*Adjusted	0.95	0.62, 1.46	0.64	0.38, 1.07	0.37	0.20, 0.68
Relatives						
Crude	1.42	0.68, 3.00	1.00	0.47, 2.15	0.60	0.29, 1.24
*Adjusted	1.05	0.44, 2.50	1.00	0.45, 2.22	0.60	0.29, 1.24
Non-hereditary cancers were excluded from these analyses *Adjusted for cancer type and age						

Table 3 shows that among patients, as compared to pre-genetic counselling, post-genetic counselling, the odds of having anxiety, depression, and distress were lower. For example, there was a 5% lower odds of anxiety post counselling (95% CI: 0.62, 1.46). However, the estimates were only significant for distress where after counselling as opposed to before, there were 63% lower odds (CI: 0.20, 0.68) of the former. Next, among the first degree relatives, as compared to pre-counselling, post-counselling estimates for anxiety show that although insignificant, relatives had slightly greater odds of experiencing the former (OR: 1.05; CI: 0.44, 2.50). For the same, the odds of experiencing distress were lower (OR: 0.60; CI: 0.29, 1.24)

DISCUSSION

Genetic counseling is a relatively recent development in India, with the first graduate level training program being introduced in 2003. However, there are variations and limitations among the institutions that offer these services[14]. As a result, genetic counseling services in India remain fragmented. This pilot research project aimed to establish the first genetic counseling center at the country's leading medical institute. The study also focused on addressing psychological symptoms in patients with familial cancer and their immediate family members. Overall, our findings indicated that counseling was effective in significantly reducing distress among patients. Although a reduction in distress was also observed among relatives, it was not statistically significant.

A previous study[15] conducted in North India among breast cancer patients found that 37% of them experienced anxiety, while 28% experienced depression. In contrast, 55% of women with ovarian cancer reported mild or greater depressive symptoms[16]. When considering only those with breast or ovarian cancer, over 70% of those who had anxiety or depression at the beginning of the study had breast cancer, and over 20% had ovarian cancer.

A previous meta-analysis of controlled trials revealed that, in general, genetic counseling had no significant impact on hereditary cancer-related anxiety (long-term pooled difference = 0.05 U; -0.21, 0.31) and worry (-0.14; -0.35, 0.06)[9]. Another study also reported similar results, finding that among women affected by breast cancer, those who received genetic counseling had comparable levels of psychological distress to those who did not receive counseling[17].

Another randomized controlled trial[18] investigating the impact of breast cancer risk counselling on distress among those with familial history reported that controlling for education level, those who received counselling had significantly lower distress than those who did not. Anxiety and distress was assessed among 412 women at risk of and those that had a previous history of familial cancer in a previous research effort[19]. While no significant change in anxiety levels were observed, worry about breast cancer reduced after a short term follow up and also at 6 months follow up. Also, no changes in worry about ovarian cancer were observed in general.

Our results showed that among patients, GTC had a significant protective effect against the psychological issues; however, this was just only significant for distress. Among relatives also post-counselling, although insignificant, there was a 40% reduction in the odds for distress. There was no association between counselling and anxiety or depression in our study, both among patients and their relatives.

Limitations: This was a pilot study and therefore had a small sample size. Another limitation was that the survey was self-administered which could have resulted in potential information bias.Collapsing the psychological outcomes categories into no and yes could have resulted in information loss as well. This study also lacked a control group and only did one group analysis.

CONCLUSIONS

This initial research endeavor aimed to address the lack of knowledge in GTC-related research in India. Our findings offer initial evidence supporting the potential protective effect of GTC in alleviating psychological distress among cancer patients and their immediate family members. Although we did observe a protective effect of GTC in reducing depression among patients, it was not statistically significant. Therefore, we recommend conducting a larger longitudinal study to further investigate this association. Additionally, future studies should examine the impact of treatment and gender-specific genetic counselling[20]

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Patient Satisfaction With The Emergency Department Services At Mai Khadija Hospital and Research Centre, Jodhpur

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Abstract:

Emergency department is receiving many patient s in a day, who present with different complaints ranging from simple complaints to the life threatning complications, patients presenting to the emergency are in great shock due acute change of their illness and expect a great service from hospital. there is always a gap between services expected and delivered to the patients, this study is to find out this gap and correct it. Measuring patient satisfaction has become an integral part of hospital/clinic management strategies across the globe Moreover, the quality assurance and accreditation process in most countries requires measuring the satisfaction of clients on a regular basis Moreover, patient satisfaction had been an important issue for health care managers and health care providers Among factors influencing patient satisfaction, the relationship between health care providers and patients was reported to be the most influential Meanwhile, expectation about the services, perceived adequacy of consultation duration, welcoming approach and perceived body signaling are considered as determinants of satisfaction.

Keywords :- Emergency Department, Triage, Quality Control, Quality Assurance, Patient Satisfaction

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INTRODUCTION

The emergency department is usually found in a hospital or other primary care center. Satisfaction refers to a state of pleasure or contentment with an action, event or service, especially one that was previously desired Moreover, the quality assurance and accreditation process in most countries requires that the satisfaction of clients be measured on a regular basis [1].Asking patients what they think about the care and treatment they have received is an important step towards improving the quality of care, and ensure local health services are meeting patients' needs [2] Regarding to patient, satisfaction is the level of happiness that patients experience having used a service. It therefore reflects the gap between the expected service and the experience of the service, from the patient's point of view [2]. Furthermore, patient satisfaction is the patient's perception of care received compared with the care expectedIt is an established fact that satisfaction influences whether a person seeks medical advice, complies with treatment and maintains a continuing relationship with practitioners [3, 4]. Donabadian, arguably the leading theorist in the area of quality assurance, has emphasized that Client satisfaction is of fundamental importance as a measure of the quality of care because it gives information on the provider's success at meeting those client values and expectations, which are matters on which the client is the ultimate authori[ty] [5, 6]In the prior years when hospitals were symbols of

humanitarian efforts for community welfare, accountability for performance was of little concern. Today however, people are increasingly concerned about hospital's performance because: -1) Hospitals use an increasing proportion of scarce community resources. 2) There are increasing questions about quality and effectiveness. [9]. Moreover, addressing those service aspects of healthcare that consumers most readily appreciate, such as access, provider relationship, availability of information and opportunity for participation can influence health care quality outcomes [7,8]A recent study from Bangladesh reported that the most powerful predictor for client satisfaction with health services was provider behavior, especially respect and politeness [9] It is indicated that health care systems in most developing countries suffer from serious deficiencies in financing, efficiency, equity and quality and are poorly prepared to meet these challenges [10]An in-depth study of the Iringa district of Tanzania, a poor rural area, showed that patients bypassed low quality facilities in favor of those offering high quality consultation and prescriptions, staffed by more knowledgeable physicians and better stocked with basic supplies [11] In Ethiopia the low level of socio-economic development resulting in one of the low standard of living, poor environmental conditions and low level of social services has been the major causes for a poor health status of the people [12, 13]Several studies conducted in Out Patient Departments of different hospitals in Ethiopia revealed client satisfaction level ranging from 22.0% in Gondar to 57.1% in Jimma [14, 16, 17]. Long waiting hours during registration, visiting of Doctors after registration, laboratory procedures and re-visiting of the Doctor for evaluation with laboratory results failure to obtain prescribed medications from the hospitals' pharmacies and difficulty to locate different sections were the frequently faced problems affecting utilization leading to dissatisfaction [15, 18-26]. This study would have an important input in assessing the level of clients' satisfaction on outpatient as well as inpatient health care services, identify the factors affecting the clients' satisfaction, and provide a recommendation on an improved health service delivery that will be helpful to fill research knowledge gaps which ultimately contributes to enhance quality of patient services in the hospital and improve the level of clients' satisfaction.

PATIENTS SATISFACTION

Patients' satisfaction (PS) is one of the important indicators of emergency care quality and outcomes of health care services [27,28, 29]. Some researchers believe that improve the work processes and hospital quality are not possible without caring to comments, requirements, expectations, and satisfaction of patients. Thus, PS has increasingly turned to one of the significant tools in evaluation of hospital performances [28]. PS is not a new concept, but because of predominance of customer-focused strategy in health care services, using satisfaction index of health care clients has been entered to the evaluation scope of hospitals since two decades ago [30, 31]. PS is the measure of quality in health care understood by patients and the resultant of different complicated factors [32]. Several factors should be coordinated with each other to make an appropriate condition for creation and development of PS with observing patient's right completely in all aspects [33]. Getting PS is one of the principles of medical ethics and the physician should have consult with patient in making any decision. Daily, several patients with serious condition are referred to the emergency department (ED) of hospitals. Considering to the especial importance of ED, increase the satisfaction in this ward has a remarkable effect on people's attitude toward the hospital (ED is the symbol of the whole hospital). EDs are confronted with challenging issues lead to reduce the PS. The satisfaction of ED clients cannot be achieved without assessment, study, and practical plan to promote the quality of services. Noticing to this issue, this study was performed to find effective factors on patient satisfaction and enhance them toward improve the quality of ED services. One of the WHO's six building blocks of health systems is the delivery of health services that are effective, safe and of good quality for those who need them . At a hospital level, providing a quality service is usually challenged by burdensome patients' flow and the urgent nature of care in the emergency department(ED)further suppresses the effort. And hence, assessing the patients' satisfaction as a quality of care indicator is required to monitor the non-technical aspects of quality of care in such settings Measuring client or patient satisfaction has become an integral part of hospital/clinic management strategies across the globe . Moreover, the quality assurance and accreditation process in most countries requires measuring the satisfaction of patient's on a regular

basis Moreover, patient satisfaction had been an important issue for health care managers and health care providers . Among factors influencing patient satisfaction, the relationship between health care providers and patients was reported to be the most influential. Meanwhile, expectation about the services, perceived adequacy of consultation duration, welcoming approach and perceived body signaling are considered as determinants of satisfaction. As patient satisfaction is considered to be a health care outcome and predictor of treatment utilization and adherence to the care and support, assessment of the level of patient satisfaction is very vital. In addition, knowing the needs of patient is of paramount essential for the achievement of sustainable development goal on health service delivery .

MATERIALS AND METHODS

Research methodology:

Sample size determination and sampling method

Sample size will be determined by using a single population proportion formula. A 95% confidence level, 5%margin of error and 54.1% anticipated satisfaction level of the patients will be considered as inputs . Systematic sampling method will employed. Busy work hours, shifts, personnel, different providers, day of the week and type of patient complaint will considered to have had an effect on satisfaction level. The total sample size will be distributed to different shift proportionately. In order to select participants in each shift, random numbers will be used.

Measurement and data collection

Pre-structured questionnaire will be taken by authors for current research in English Data will collected via face-to-face interviews . The questionnaire contained satisfaction indicators socio-demographic characteristics of the emergency clients and different dimensions of emergency services such as consultation time with physician, courtesy of staff, health care service, and waiting time. Due to the fact that emergency service is given to 24 hours only, the patient we will interview immediately after getting emergency service within this time frame. i.e. at the time of admission to inpatient ward from emergency department or before the clients go to their home after getting emergency service.

Quality control

To maintain the quality of the data, the questionnaire will be pretested. The interviewers will not wear uniforms or badges. The interviewers will be oriented about unifying their communication and the process of interviewing the patients.

Data analysis

Data will be cleared, edited, coded after it will entered into Epi Info version 3.5.1 and will be exported to SPSS version 20. Descriptive statistics will be used to determine satisfaction indices.Factor analysis will be done to identify factors that explained most of the variance observed in the population with regard to each scale.

DISCUSSION

This study represents one of the few to provide insight into the correlation between individual qualitative indicators such as patient satisfaction and the effectiveness of health care services. The main contribution of this study relates to three factors. Firstly, we used the EUROPEP survey to measure patient satisfaction with EMS. Despite the fact that the survey was adapted to suit the needs of our study, it proved to be very reliable as the Cronbach's alpha coefficient for the entire questionnaire was calculated as 0.911, and 0.957 for EMS treatment in its strictest sense. We have, therefore, managed to create a questionnaire that could also be used in future research to measure patient satisfaction with EMS clinics. However, it would make sense to make further improvements. There is currently no universally accepted standard instrument for measuring patient satisfaction available for use by researchers. Some questionnaires only assess the level of satisfaction with a particular segment of health care provision, that is they either focus on measuring satisfaction levels with treatment, or the work of doctors and nurses. Secondly, our research has deomonstrated the link between waiting times and levels of patient satisfaction with EMS clinics, especially in connection with the organizational model of these clinics. Prior studies have empirically explored the link between patient waiting time and patient satisfaction within the primary care settings. Yet, the understanding of the

link between waiting time and patient satisfaction in the context of the effectiveness of EMS organizational model remains rather unclear. Our study has confirmed that the effectiveness of the EMS organizational model, where the length of the time spent for an examination was used as an indicator of the effectiveness, impacts on the level of patient satisfaction. Other research studies also identified waiting time in the clinic as an important indicator of patient satisfaction. One study demonstrated that longer waiting times were a particular independent risk factor for patient dissatisfaction In general, waiting time may be categorised as a waste and may be associated with many problems Indeed, root causes behind the problems must be identified so as to enable the elimination of waste and improve upon health care performance . Some preliminary studies from the field of EMS were concerned with the question of how to develop relevant qualitative indicators and how to identify relevant attributes of the indicators . Patient satisfaction is an important qualitative indicator, which existing literature particularly emphasizes in the context of a focus on the patient and the acquisition of feedback. Patient satisfaction is a complex issue, and though it has been at the forefront of research since the 1980s, there is still no solid conceptual/theoretical basis for measuring it . Our study showed statistically significant differences ($p<0.05$) were revealed in all four dimensions of patient satisfaction in terms of the effectiveness of the EMS organizational model. These are: staff ($F=10.316$; $p=0.000$), clinic premises ($F=5.729$; $p=0.001$), clinic facilities ($F=5.445$; $p=0.002$) and the organization of the EMS ($F=5.249$; $p=0.002$). Patients who waited for an appointment for over 2 hours were statistically significantly less satisfied in all four dimensions of satisfaction. Other studies have also identified waiting time as an important area that needs to be improved Despite all of the problems related to healthcare systems, research still shows high levels of patient satisfaction with EMS staff. In France, for example, 89.7% of patients were satisfied with EMS clinics, where they gave the highest scores to the quality of reception (92.5%), and the lowest scores to doctor provided information (71.9) and waiting times (72.6%) . According to one study, which included a general patient satisfaction survey of EMS clinics, 48% of patients were satisfied with physician service, 41% of patients with waiting times, and only 11% of patients with nursing care . Our research has confirmed that patients are in general most satisfied with staff and least satisfied with the organization of EMS. Health care staff were given the highest score, that is, a score of excellent, by 78.2% of the patients, while only 56.4% of the patients rated the organization of the EMS with the highest score. Patients perceived health care workers as highly qualified and able to carry out their tasks. It is vital to understand how health care providers can impact on patient experience in terms of the quality of care. From this perspective, the elements of health care practices and their effect on patient satisfaction should be addressed. For each health care indicator, for example as in the study carried out in EMS Maribor, over two thirds of the patients surveyed rated the service as excellent. Most prominent in the negative direction was the indicator that pertained to the explanation of the purpose of the scope of treatment, which was rated as worse by 4.2% of the respondents. As shown by Sendlhofer et al. patients perceive information on patient safety measures as well as explanation of treatment and information on associated risks as very important . Prior studies have revealed that factors such as ‘relationship and communication of doctor’, ‘adequate organization’, ‘adequate system of appointments’, and ‘relationship and communication of medical nurses’ play an important role in achieving patient satisfaction. Thirdly, our research has also revealed an important weakness in the current organization of the EMS at the prehospital level in Slovenia, since triage was not performed upon a patient’s arrival in the EMS in 23.8% of the cases. This is a major problem within the system, as it is the first point of contact between the health care provider and the patient, and the way information is provided at this time, and the interest shown in a patient‘s problems, are important elements influeincing satisfaction levels with the service . The same study found that 82.3% of patients were asked the reason for their visit, 53.5% received advice, and only 48.9% were given information in some form on therapy procedures. In our study patients also identified as most problematic the fact that information on the order of treatment was frequently not clearly indicated. With respect to the organization of the EMS, patients most agreed on the point that a doctor should always be present in the emergency health clinic and that a paediatrician should be available 24 hours a day. At the same time, they were most satisfied if they could complete the entire treatment in one place. There was least agreement on whether it was acceptable to place a

team of trained paramedics in smaller and more remote regions without a doctor. Our research also has some limitations. The small sample size (14.6% response rate) represents a weakness in our research, which limits the possibility of generalizing the results obtained. Nevertheless, the survey revealed some significant findings that may serve as a guideline in the ambitious reorganization of EMS that we are witness to today. The study analyzed only one of the factors that influence the effectiveness of the EMS clinics. In particular, from the viewpoint of quality control and patient safety in EMS clinics, it would be useful to determine the influence of other factors that were not included in our survey. In addition, it would be sensible to create a reliable questionnaire to measure the level of satisfaction with the work of EMS clinics, with the questionnaire covering all dimensions of health care treatment, not just particular sections.

Table 1- Demographic profile of the subjects. N=385

S.No.	Variable		Frequency	Percentage	Total
1.	Age	18-27	112	29.10	385 (100%)
		28-37	84	21.82	
		38-47	63	16.36	
		48-57	56	14.54	
		58 & above	70	18.18	
2.	Gender	Male	210	54.55	385 (100%)
		female	175	45.45	
3.	Educational status	Up to Middle	105	27.27	385 (100%)
		Secondary	42	10.90	
		Higher secondary	70	18.18	
		Graduate	105	27.27	
		Postgraduate	63	16.36	
4.	Residential area	Rural	231	60.0	385 (100%)
		Urban	154	40.0	
5.	Visit to ED	First time	210	54.55	385 (100%)
		Many times	175	45.45	
6.	Informant	Patient	182	47.27	385 (100%)
		Relative	203	52.73	

Table 2 - Different level of satisfaction among the subjects. N=385

S.No.	Level of Satisfaction	Frequency	Percentage	Mean score±SD
1.	Below average (<10)	00	00	28.43±4.527
2.	Average (10 to 20)	62	16.10%	
3.	Good (21 to 30)	211	54.80%	
4.	Very good (31 to 40)	112	37.40%	

RESULTS

The findings of percent study showed that giving services to emergency clients in various fields such as physical comfort and residential aspects, physicians care, nurse care, and the total ED satisfaction is relatively agreeable. The periodic and continuous assessment as well as comparison of satisfaction and dissatisfaction parameters during the time, before and after performing the changes, could be effectual. We

found that patient satisfaction is a powerful quality improvement tool to measure the quality of care patient received. We also found that high acuity patients are more satisfied in terms of care and attention they received during their stay in emergency room. This is the unicentral , oberservational study , which include the patients coming to the emergency department , 24 *7 , here we have collected the data obtained from emergency department and did study the satisfaction level among the patients and family members. We conclude that among the 385 patients , majority of the patients had the Good level of satisfaction (211, i.e 54.8 %) ,very good satisfaction in (112 , i.e 37.40 %) ,and average satisfaction in (62 i.e 16.10 %) of all patients. To study the marks given by the patients we use the table which is given in annexure .

S.No.	Variable	Level of Satisfaction	
		Chi-square value	p-value
1.	Age	3.488	0.47
2.	Gender	4.884	**0.02***
3.	Education al status	1.188	0.88
4.	Residential area	3.124	0.07
5.	Visit to ED	5.461	**0.01***
6.	Informant	1.982	0.15

p value of our study is * = significant at ≤0.05 level . This study tells us about the our all level of satisfaction

Have p value of <0.05. which is significant .which is best among the number of the visit to ED and gender .

Conflict of Interest :- Nil

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A Study To Assess Preventive Practices Among Women With Cervical Cancer and General Population At Tertiary Care Hospital, Jodhpur

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Abstract:

Cervical cancer is most prevalent in developing countries and ranks as the third most common type of cancer among women worldwide. Unfortunately, it often presents at a later stage, resulting in high rates of illness and death. The PAP smear, a groundbreaking screening test discovered in 1941, has not been widely accepted. The objective of this study was to assess the level of awareness among rural women regarding the prevention of cervical cancer and to examine the factors that influence this awareness. The global burden of cancer is on the rise, particularly in low- and middle-income countries, leading to poor outcomes in terms of illness and mortality. The lack of knowledge about the risk factors, symptoms, and signs of common cancers, coupled with insufficient community-based cancer prevention programs, poses a significant obstacle to early detection. According to the Indian Council of Medical Research's National Cancer Registry Program, the highest rate of cancer was reported in the North East Region (NER) of India between 2012 and 2014. Aizawl, Mizoram, recorded an age-adjusted rate (AAR) of 271 cancer cases per 100,000 males, while Pampumpare, Arunachal Pradesh, reported 249 cancer cases per 100,000 females. In the Kamrup district of Assam, the AAR incidence was 206 per 100,000 males and 174 per 100,000 females.

Keywords : Cervical Cancer, Oncology Nursing, Preventive Oncology,

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Introduction

Cervical cancer is a significant cause of mortality for women worldwide, ranking as the fourth leading cancer killer among women and seventh overall.[1] However, developed nations have lower incidence and mortality rates due to regular screening practices. [2] Unfortunately, there is a lack of awareness among Indian women regarding cervical cancer, its risk factors, and preventive measures. Even educated women, who possess knowledge about the disease, do not seek screening at healthcare facilities. The main cause of cervical cancer is the human papillomavirus (HPV), which has over 100 types. Types 16 and 18 are considered the highest risk types for cervical cancer and account for approximately 70 percent of cases in India. [3-4] Vaccines like Cervarix and Gardasil protect against these HPV strains, as well as others. It is recommended to administer these vaccines to girls at the age of 11 to 12, or as early as nine. [5-6] The burden of cervical cancer is increasing globally, with a majority of women being diagnosed in advanced stages (III and IV) when the chances of survival are significantly reduced. [7] Many women are unaware of the preventive measures that can help reduce the burden of this disease. Therefore, it is crucial for healthcare professionals to focus on preventive strategies. To do so, it is necessary to assess the knowledge and practices of existing cervical cancer patients.

Materials and Methods

This study was a comparative, cross-sectional survey conducted at a tertiary care hospital in jodhpur from August 2014 to December 2014. The participants included women with cervical cancer (Cases) who were enrolled from the cancer department, and the general population (Controls) who were women without any cancer and were caregivers of patients with non-malignant diseases in different wards of the tertiary care hospital. The initial estimated sample size was 81 cases and 81 controls, but conveniently, 100 cases and 100 controls were enrolled. The inclusion criteria for cases were women aged 18-65 years, diagnosed with cervical cancer based on the diagnostic criteria (cervical biopsy), and attending the outpatient cancer department. The inclusion criteria for controls were women without any cancer, aged 18-65 years, and without any family history of cervical cancer. Participants who were not willing to take part in the study were excluded. Data were collected using self-developed, validated, and pretested questionnaires. The demographic profile included 22 items such as age, marital status, and locality, while the socio-economic status was assessed using Kuppuswamy's socioeconomic status scale. The clinical profile of cases included ten items related to the disease of the subjects. The knowledge questionnaire consisted of 22 items that covered information about the causes, risk factors, symptoms, prevention, and treatment of cervical cancer. The questionnaire included multiple-choice questions and true/false/don't know responses, with correct answers scored as one and incorrect or don't know responses scored as zero. The health beliefs questionnaire was a five-point Likert scale consisting of 19 items (nine positively worded and ten negatively worded) that assessed the health beliefs of women regarding

cervical cancer. The health beliefs were assessed under four domains: perceived susceptibility, perceived seriousness, perceived benefits, and perceived barriers. The scoring ranged from one for strongly disagree to zero for strongly agree.

Results

Mean age of cases was 49.19±8.92 years and of controls was 47.94±8.57 years. Subjects in the both groups were matched in terms of age, age at menarche, age at menopause, religion, locality, socio-economic status. All the subjects (100%) were married in both groups and majority of subjects in both groups (82% cases and 89% controls) were staying together with their husband. Majority of subjects belonged to Hindu religion (87% cases and 84 % controls). Most of subjects in both groups were from rural locality (59% cases and 57% controls) and belonged to lower/upper lower socio-economic status (67% cases and 79% controls). The groups were not comparable in terms of age at marriage (*P*=0.0006).

Clinical Profile of cases

Majority(65%) of cases were in age group 41-60 years at the time of diagnosis. Most of cases (59%) had been diagnosed with cervical cancer since more than six months and were undergoing both chemotherapy and radiotherapy. Only 15 cases had family history of cancer. Most common cancer in the family was head and neck cancer (5/15).Only two cases had family history of cervical cancer and this was the mother. Almost half of cases (48%) underwent biopsy, CT scan and blood tests. Most common presenting symptom was vaginal discharge (46%).

Majority of cases (78%) and controls (90%) had poor knowledge regarding cervical cancer. Only one case and one control had good knowledge regarding cervical cancer (Fig1).Cases had higher overall knowledge, as compared to controls (*P*=0.005). Also cases had higher knowledge as compared to controls in symptoms (*P*= 0.0001) and treatment (*P*= 0.0001) domains of knowledge. (Table1)

Most participants; 83% cases and 67% had positive health beliefs regarding cervical cancer. (Fig 2). But on comparison of overall sores, it was found that cases had positive health beliefs (higher overall score) as compared to controls (*P* = 0.018). Also cases had higher score as compared to controls in perceived benefits (*P*=0.0007) and perceived seriousness (*P*= 0.007) domains of health beliefs. (Table 2)

But the response of subjects in individual items regarding health beliefs was not consistent. Majority of cases (63%-88%) and controls (72%-97%) gave neutral response when asked regarding efficacy of HPV vaccine in preventing cervical cancer, importance of Pap test in depicting health status of a woman, if Pap test was painful, if Pap test was costly and if Pap test was time consuming. Most of cases 60% and 48% of controls either agreed or were neutral regarding screening was of no use if a person didn't have any symptom of cervical cancer. More than half of cases (51%-58%) and majority of controls (65%-90%) disagreed that screening was not necessary as cervical cancer had no cure, partner's consent was necessary for Pap test, it was embarrassing to get Pap test and cervical cancer could happen to a woman

more than 50 year only. Majority of controls (61%) and 47% of cases disagreed that getting Pap test at younger age labeled a woman sexually active. Majority of cases (75%-82%) andcontrols (72%-80%)agreed that all women had equal chance of getting cervical cancer and HPV infection was curable with proper medical treatment. Majority of cases (75%) and 57% of controls agreed that cervical cancer would affect sexual activity of a woman.

Majority of cases (93%) had fair preventive practices regarding cervical cancer but most of controls (62%) had poor preventive practices regarding cervical cancer (Fig 3). Cases had better overall preventive practices as compared to controls (*P*=0.0001). Also cases had better health care (*P*=0.0001) and hygiene practices (*P*= 0.0001) as compared to controls. (Table 3)

Most of the subjects (78% cases and 80% controls) were not using condom as a method of contraception. Five cases and three controls had multiple sex partners. None of the cases were using condom with partner other than husband but one control was using. Though 24 cases and three controls had undergone Pap smear test, only one case and control got it done as per the guidelines. All the cases (100%) were following regular gynecological checkupwhile only three controls were going for regular gynecological checkup. None of the cases and controls had received HPV vaccine. Majority of subjects (95% cases and 69% controls) were maintaining genital hygiene after every urination and all the participants (100% cases and controls) were maintaining genital hygiene after every defecation. Majority of subjects (90% cases and 98% controls) were using only water for cleaning genitalia while rest were using both soap and water. Most of subjects (68% cases and 57% controls) were changing undergarments daily while 28% of cases and 42% of controls were not wearing undergarments. Of the women in menstrual age, majority of subjects (28/30 cases and 51/52 controls) were maintaining genital hygiene during menstruation and 27/30 cases and 49/52 controls were taking daily bath during menstruation. Most common material used by cases during menstruation was cloth (13/30) followed by napkin (12/30) and most common material used by controls was cloth (32/52) followed by napkin (32/52). Most of subjects (21/30 cases and 33/52 controls) were using 1-2 pads per day during menstruation.

In controls there was a positive correlation of knowledge with health beliefs (*P*=0.0001) and health beliefs with preventive practices (*P*=0.0469) but in cases none of these correlations were found. (Table 4) When the correlations were analyzed domain wise it was found that in cases knowledge had a positive correlation with health care practices (*P*=0.03). In controls knowledge had a positive correlation with health care practices (*P*=0.001) and hygiene practices (*P*=0.02). Thus, the subjects who had higher knowledge had better health care and hygiene practices (*P*<0.05). This suggests that for better preventive practices knowledge improvement is important.

In controls a positive correlation of knowledge was found with perceived benefits (*P*=0.0001), perceived barriers (*P*=0.006), perceived susceptibility (*P*=0.002) and perceived seriousness (*P*=0.01). In cases none of these correlations were found. Hence, the subjects

who had higher knowledge perceived more benefits from preventive strategies, perceived less barriers for screening, perceived themselves more susceptible to cervical cancer and perceived cervical cancer as more serious disease.

A negative correlation of age was detected with knowledge (*P*= 0.02) and preventive practices among cases (*P*= 0.048); and with health beliefs (*P*=0.005) and preventive practices (*P*=0.001) among controls. In cases there was a positive correlation between locality and health beliefs (*P*=0.02) with subjects living in urban locality having positive health beliefs as compared to those living in rural community.

Discussion:

In the present study majority of subjects (78% cases and 90% controls) had poor knowledge regarding cervical cancer. Overall mean knowledge score for cases was (6.33±2.95) and for controls was (5.26±2.646) (range 0-22). Findings are congruent to the study by Harsha KS, Tanya S (2014)([**Error! Bookmark not defined.**])where majority of subjects had poor knowledge about cervical cancer (81.9%); but contrary to the findings of Lee-Lin et al. (2007)[8]who reported higher mean knowledge score of subjects (5.41±2.33, range = 0–12), which is higher as compared to present study. It may be because in the study by Lee-Lin et al. (2007)[8], 48% of subjects had a college or graduate degree and 77% of women had regular health care provider while in present study only four cases and 10 controls had a college or graduate degree.

In the present study both cases (4.42 ± 2.16) and controls (4.44 ± 1.91) had fair knowledge regarding causes of cervical cancer (range = 0-11) but poor knowledge regarding screening (cases 0.03 ± 0.17, controls 0.10 ± 0.44) (range = 0-3). Similar findings are shown by Harsha KS, Tanya S (2014) where majority of subjects had poor knowledge about cervical cancer screening (85.5%). Findings are contrary to the study done by Aswathy S et al (2012)[9]where 89.2% women did not know even a single risk factor but 74.2% women were aware of screening tests.

In present study perceived barriers to screening were: absence of symptoms (47% cases and 33% controls), fear of being mislabeled as sexually active (33% cases and 30% controls), perception that Pap test is embarrassing (39% cases and 29% controls),seeking permission from partner is necessary (41% cases and 21% controls),Pap test is painful (7% cases and 2% controls). Findings are in line with the study done by Abotchie PN, Shokar NK. (2009)[10]whereperceived barriers to screening were: (40.6%) believed non-consenting partner for screening, (23.2%) perceived high cost as barrier, (24.6%) afraid of being labeled as sexually active after screening, (9.4%) perceived pap test painful.

In present study only 19% cases and 7% controls were in agreement regarding importance of Pap test in depicting health status of a woman. Findings are not comparable to the findings of Abotchie PN, Shokar NK. (2009)[10] where 87.6% subjects were in agreement regarding importance of Pap test in depicting health status of a woman.

Regarding perceived susceptibility to cervical cancer only 27% cases and 13% controls believed that cervical cancer can happen to a woman aged more than 50 years only and 75% cases and 80%

controls perceived every woman being at risk of getting cervical cancer. Findings are in line with the study done by Abotchie PN, Shokar NK. (2009)[10] where only 2.2% subjects perceived that cervical cancer can happen to a woman of over 50 years age only and 73% women perceived themselves at risk of getting cervical cancer.

In present study majority of cases (93%) had fair preventive practices regarding cervical cancer but most of controls (62%) had poor preventive practices regarding cervical cancer. Difference in preventive practices may be because patients acquire knowledge regarding cervical cancer and its prevention during course of treatment from health care professionals.

In thisstudy only 24% of cases and 3% of controls had undergone Pap smear test but only one case and control got it done as per guidelines. Findings are in line with study done by K O Wright et al (2014)[11]where only 5.1% subjects underwent Pap test. Similar findings were reported by Basu P et al (2013)[12] where only 6.2% women had Pap smear test at least once in their lives. On the contrary Lee-Lin et al (2007)[8]reported 68% women having a Pap test within the prior three years.

In our study negative correlation was found between age and preventive practices among all subjects (n=200, *P*=0.0007) as well as among cases (*P*=0.048) and controls (*P*=0.001). Similar findings were reported by Lee-Lin et al (2007)[8] who found a significant negative correlation of age with Pap test done in previous three years (*P*=0.001)

Strengths: It is less researched area in India and informal education was given to subjects for prevention of cervical cancer after data collection.

Limitations:Small sample size and convenient sampling limits the generalizability of the study. This was a single- center studyandself-developed questionnaires were used for data collection. Recommendations: Multi-center studies on assessment of knowledge, health beliefs and preventive practices can be conducted.Similar studies can be conducted with large sample size.

FIGURES AND TABLES

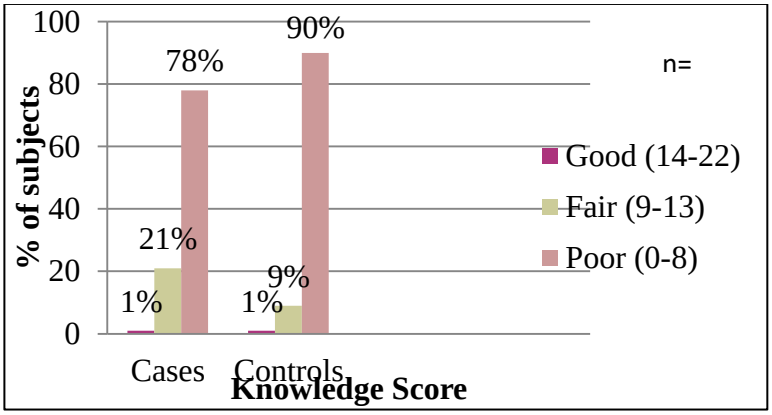

Fig 1. Knowledge in cases and controls regarding cervical cancer

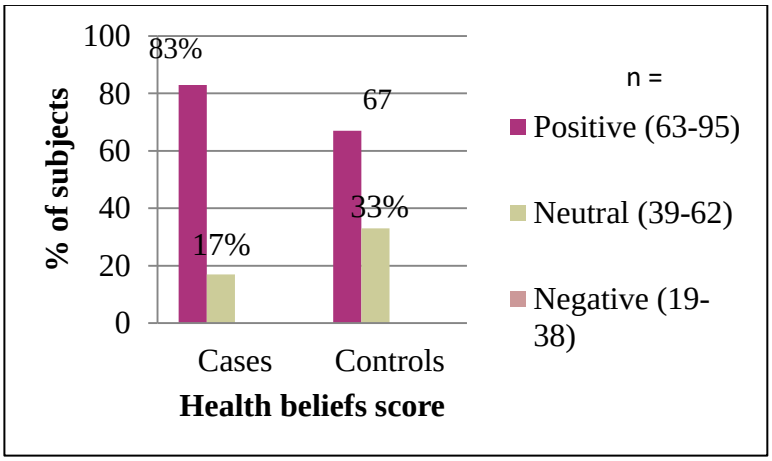

Fig2. Health Beliefs in cases and controls regarding cervical cancer

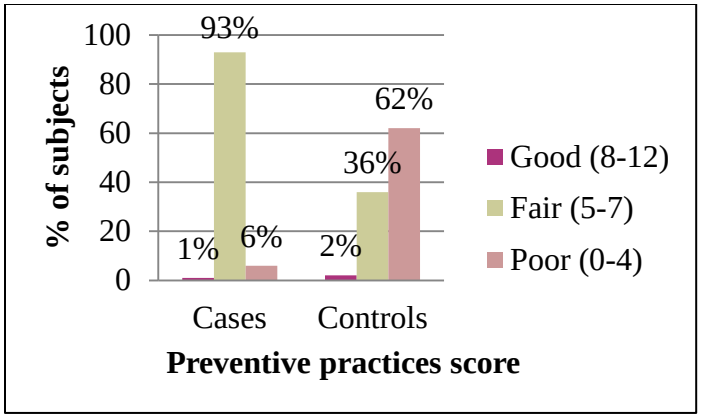

Fig3. Preventive practices in cases and controls regarding cervical cancer

Conclusion:

In this study though the cases had significantly higher overall knowledge, positive health beliefs and better preventive practices as compared to controls but the knowledge regarding cervical cancer was poor in both groups. Both groups had gaps in knowledge especially regarding symptoms, screening, HPV vaccination and prevention and preventive practices especially sexual and health care practices. Hence the need of the hour is to disseminate information about cervical cancer and to raise public awareness regarding risk factors, symptoms, screening and prevention of cervical cancer so that the disease can be prevented by modifying the risk factors.

Table 1:Comparison of domain wise knowledge score regarding cervical cancer among cases and controls n = 200

Knowledge Domains	**Cases (n_1=100)**		**Controls (n_2=100)**		***P* value**
	Median (Min-Max)	**Mean ± SD**	**Median (Min-Max)**	**Mean ± SD**	
Overall Knowledge (0-22)	6.5 (0-16)	6.33±2.95	5 (0-14)	5.26±2.646	0.005*
	4 (0-10)	4.42 ± 2.16	5 (0-8)	4.44 ± 1.91	0.99
Symptoms (0-3)	1(0-3)	0.70 ± 0.63	0(0-1)	0.33 ± 0.47	0.0001*
Screening (0-3)	0.0(0-1)	0.03 ± 0.17	0.0(0-3)	0.10 ± 0.44	0.29
Treatment (0-3)	2 (0-3)	1.1 ± 0.70	0.0 (0-2)	0.25 ± 0.52	0.0001*

HPV vaccination and prevention (0-2)	0.0 (0-1)	0.08 ± 0.27	0.0 (0-3)	0.14 ± 0.43	0.34

Wilcoxon rank - sum test *Significant at $P<0.05$

Table 2: Comparison of domain wise health beliefs score regarding cervical cancer among cases and control

n = 200

Health Beliefs Domains	**Cases (n_1=100)**	**Controls (n_2=100)**	***P* Value**
	Mean± SD	**Mean± SD**	
Overall Health Beliefs (19-95)	67.73±6.61	65.54±6.45	0.018*
Perceived Barriers (8-40)	23.92±4.49	23.2±4.182	0.24
Perceived Benefits (4-20)	14.88±2.16	13.85±2.06	0.0007*
Perceived Susceptibility (2-10)	7.98±2.16	8.55±2.09	0.06
Perceived Seriousness (5-25)	20.95±2.812	19.94±2.337	0.007*

Independent t test *significant at $P<0.05$

Table 3: Comparison of domain wise preventive practices score regarding cervical cancer among cases and controls **n = 200**

Preventive Practices Score	**Cases (n_1=100)**		**Controls (n_2=100)**		***P* Value**
	Mean ± SD	**Median (min-max)**	**Mean ± SD**	**Median (min-max)**	
Overall Practices (0-12)€	5.69±0.82	6(3-8)	4.24±1.09	4 (2-8)	0.0001*
Sexual practices (0-4)ⁿ	0.84±8.99	1.0 (0-4)	0.93±0.62	1.0 (0-4)	0.30
Health Care Practices (0-3)ⁿ	1.24±0.43	1.0 (0-2)	0.06±0.31	0.0 (0-2)	0.0001*
Hygiene Practices (0-5)€	3.61±0.05	4 (2-4)	3.25±0.71	3 (2-4)	0.0001*

€Independent t test, ⁿWilcoxon rank- sum test *significant at $P<0.05$

Table 4: Correlation of Knowledge, health beliefs and preventive practices among cases and controls

Cases (n_1=100)		
Variables (Mean ± SD)	**Knowledge** (6.33±2.95)	**Health Beliefs** (67.73±6.60)
Health Beliefs (67.73±6.60)	r= 0.0341 *P*= 0.74	1.000
Preventive practices (5.69±0.825)	r= 0.1752 *P*= 0.08	r= 0.1197 *P*= 0.24
Controls (n_2=100)		
Variables (Mean ± SD)	**Knowledge** (5.26±2.646)	**Health Beliefs** (65.54±6.45)
Health Beliefs (65.54±6.45)	r= 0.5135 *P*= 0.0001*	1.000
Preventive practices (4.24±1.09)	r= 0.1948 *P*= 0.05	r= 0.1992 *P*= 0.0469*

r= Pearson correlation coefficient *significant at *P*<0.05

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Effectiveness of Artificial intelligence based technology to improve wound assessment and better management: A Review Article

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Abstract:

Wound care clinicians face challenges in accurately predicting wound healing trajectories due to the intricate and dynamic nature of the healing process. During clinical visits, wound care teams capture images of wounds, resulting in the accumulation of extensive datasets over time. The development of innovative artificial intelligence (AI) systems can assist clinicians in diagnosing, evaluating therapy effectiveness, and forecasting healing outcomes. Precise assessment of wound area and the percentage of granulation tissue (PGT) play a crucial role in optimizing wound care and achieving favorable healing results. By utilizing AI-based wound assessment tools, the accuracy and consistency of wound area and PGT measurements can be enhanced, leading to improved efficiency in wound care workflows. Accurate measurements of wound area are particularly vital in optimizing outcomes for patients with chronic wounds. Furthermore, the determination of the percentage of healthy granulation tissue in the wound bed is essential in assessing whether a wound is likely to heal or is ready for definitive closure through skin graft or flap procedures.

Keywords : Artificial Intelligence, Wound Assessment, Wound Healing

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Introduction

Most commonly the wounds with complexity and chronic in nature can be seen in elderly population. According data of united states around 3% of population have open wounds with age more than 65 years[1]. Not only in United States but the impact of chronic wound can be seen worldwide and lead to persistent problem with the population. Difficulty in reaching the patients with wound for its management and these lack of regular visits can lead increase in hospitalization rates by 20 times.[1] In order to decrease the rate of hospitalization and improve the wound care management and its prognosis artificial intelligence and its application in these terms will be helpful in today's era and will be the future of health care[2].

Wound

Whenever a living tissue faces damage or interruption in its continuity either anatomically, physically or cellularly is defined as wound.[1] According to WHO, wound can be clean (normal tissue), contaminated

(consists of infective substances), clean contaminated (low level of infection), infected (where pus is present and tissues lose their vitality). [2] Wound can be classified as healing and non-healing. Healing wound can be treated and are not associated with any comorbidity and have the ability to get heal with time whereas the non healing wound which are associated with comorbidity can lead to various medical issues like sepsis, shock, limb amputation and even to death.[3]

Wound Assessment

We assess the wound to evaluate the level of contamination so that professionals can estimate the morbidity, mortality and quality of life. [3] Human body by the virtue of environment and its contact consists of pathogens which can cause potential harm to the human body when the host's defense mechanism is weak or is unable to overcome those microorganisms present inside the human body as in case of cancer patients who have compromised immunity due to the treatment of this disease which consists of chemotherapy , surgery and radiation which works as influencing factor here to boost the potential effect of microorganism leads to infection early and it can be fatal. A complete patient assessment including history of illness and a comprehensive wound assessment by a specialized health professional and its documentation is necessary here to improve the quality of life of patient. [4] In order to assess wound the source, site and type of it must be taken into consideration to provide better care and ultimately to enhance healing. Approach towards the treatment and care of wound depending upon these factors as it may definitely change with it. [5] There are basically four phases of wound healing- first is exudative phase- in this phase neutrophils are activated leads to formation of fibrin clot; second is resorptive phase- in this phase degradation of fibrin and migration of macrophages towards the wound takes place; third is proliferative phase- in this phase formulation of granular tissue takes place; fourth is regenerative phase- in this phase epithelization and scar formation takes place. Based on immunological aspects wound healing is divided into three phases theses are inflammatory phase, proliferative phase and wound modulation phase. [16]

Wound management

A multidisciplinary team approach, adequacy of knowledge and implementation of evidence based practices related to wound, location, its type, medical and surgical history of patient, ongoing treatment, risk factors associated with the living environment and manifesting bodily changes are required to make a effective therapeutic care plan for the patient.[5] Multidisciplinary team includes physicians, surgeons, specialized wound care nurses, counselors, physiotherapists, occupational therapist and pharmacists. For long term treatment of wound this entire team will work together by assigning particular duties to one and all working in team and by maintaining a good communication with clear messages and documentation. [6]

Artificial Intelligence

In today's era artificial intelligence brings a revolution in health care delivery system by not only aided in detecting the disease at its earliest but also to manage, communicate and reach out to the population in need of healthcare. [7] AI will transform the relationship between people and technology, charging our creativity and skills. The future of AI promises a new era of disruption and productivity, where human ingenuity is enhanced by speed and precision. Wound care can be standardized through understanding and training. AI married to human intelligence will allow a more rapid standardization and specialization of wound care. This will be through two main areas: one, the actual ability to standardise practice through the many levels of care delivery and second, the ability, through the application of technology, to "up-skill" its delivery even through less-trained resources (eg, family or patient). [8] AI may offer the golden opportunity to assist in a "physician-aided" period whereby human and artificial intelligence come together to offer physicians more time to paradoxically make healthcare human again. [14]

AI-Application

Artificial intelligence techniques have a huge impact and prospects in the wound care and its management. AI-based remote consultation systems using the smart phones and tablets for data collection and connectivity is another important development of concern. [9]According the article "artificial

intelligence in medical technologies" the principal wings of medicine utilizing artificial intelligence are pulmonology, cardiovascular medicine, orthopedics, hepatology, neurology and oncology. Application of artificial intelligence can be divided into three main categories on the basis of its functionality, first is health data collection which includes detection and data extraction, second is disease data analysis which includes classification and identification of disease and the third is active treatment processes including prediction and prognosis of disease. [10] Image recognition and visualization methods in radiology, is a common approach in oncology treatment. [11] AI-based digital wound assessment tools provides a framework in evaluating wounds. Wound assessment tools helps to measure various wound features and can be adapted to evaluate other AI-based digital image diagnostic tools. [12-13,14] Artificial intelligence holds immense potential to alleviate challenges associated with complex wound management. Caring of chronic and complex wound is difficult as it may comprises of factors like poor vascular supply or vascular damage. For this an AI driven specialized chatbot software is helpful in assessing, diagnosing and treating the wounds with complexity. [17-19]

Result and Discussion

The primary factors that drive costs and outcomes in chronic wound care are the time it takes for wounds to heal, the frequency of treatment, and the occurrence of wound complications. These factors heavily rely on accurate wound assessments, which are crucial for developing effective treatment plans. Artificial intelligence (AI) is increasingly being utilized to optimize diagnostic and therapeutic workflows, and it is now making an impact in the field of wound care. However, reaching a consensus among expert clinicians regarding wound assessments has proven to be challenging, making it difficult to accurately measure key indicators of wound healing. Clinicians require clear, efficient, and precise wound analysis to guide their clinical practices effectively. Therefore, it is necessary to further standardize the testing and implementation of AI-based digital wound assessment tools. We propose that adopting a structured approach to wound assessment using advanced technologies like AI can enhance treatment effectiveness and lead to improved outcomes for patients with chronic wounds. In the future, it is important to expand the assessment methods to include other wound characteristics and to track the progress of the same wounds over time, considering relevant demographic and clinical factors, to evaluate their impact on wound progression. Additionally, there is potential to utilize machine learning to identify wounds that may have slow healing rates or require immediate medical attention. This would enable efficient triage of care and alleviate the burden on healthcare resources.

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The Global Perspective of Oncology Nursing and Its Challenges

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Abstract:

Cancer is a highly prevalent and deadly disease in current times and the most common contributor to premature mortality globally. It is imperative that more sophisticated and specialized treatment options be made available in response to the rising incidence of cancer. It is evident through many studies that the care provided by oncology nurses improves patient outcomes and care quality. An oncology nurse provides essential nursing care (i.e., education and support; administering, monitoring, and evaluating treatment outcomes); identify and manage complications; supportive and palliative care; and leading and collaborating on clinical research. Various obstacles, such as a lack of qualified personnel, recruitment barriers, burnout, frequent addition of newer innovations, lack of research mentors, inadequate funding for services, low representation of oncology nurses in decision-making, frequently changing workforce, economic and linguistic disparities etc. are frequently faced by oncology nurses. An efficient oncology nursing workforce can be acquired through specialized education, research, and clinical training which ensure professional growth and, a say in decision-making. Governments and policymakers should take initiatives for mapping cancer care resources and the adequate oncology workforce before it is too late.

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Introduction

Cancer is a highly prevalent and deadly disease in current times. It is the most common contributor to premature mortality in most developing countries, too. On account of the major types of cancer, it is predicted that cancer incidence will double in the next fifty years.[1-3] There are disparities and heterogeneity

in the burden of cancer in developed and developing countries. Current cancer incidence in developed countries is three times higher than in developing countries, but at the same time, most of the increase in cancer incidence and mortality due to cancer is in developing countries. [4-5] A large gap has been observed between developing countries (which are struggling for proper infrastructure and resources for diagnostic and treatment modalities and underdeveloped support services) and developed countries (which are focusing on genome-targeted therapies and immunotherapy). [2,4,6-7] It is imperative that more sophisticated and specialized treatment options be made available in response to the rising incidence of cancer and that positions support patients from the time of diagnosis through treatment, survivorship, end-of-life care, and bereavement services. [1,8] To meet all specialized needs, there is a dire need to develop a specialized field of oncology nursing. In 2022, the World Health Organization released a report stating that nurses accounted for approximately half of all healthcare practitioners. [1] Keeping an eye on the increasing incidence and high mortality in incident cases, now is the right time to channel this skilled workforce into providing specialized, focused care in anticipation. It is evident through many studies that the care provided by oncology nurses improves patient outcomes and care quality. [1] The spectrum of services provided by an oncology nurse is very wide; it provides essential nursing care (i.e., education and support; administering, monitoring, and evaluating treatment outcomes; identifying and managing complications; providing supportive and palliative care; and leading and collaborating on clinical research) not only to the patient but also to their family and community. [1] The field of cancer care encounters various obstacles, such as a lack of qualified personnel, inadequate funding for services, low representation of oncology nurses in decision-making, and numerous others. [7,9] With the rising incidence of cancer and the need to improve survival rates, it is necessary for more nurses to be trained in cancer care and to retain them. [10]

The global perspective of oncology nursing

The field of oncology nursing is changing to meet the needs of increased cancer incidence, more advanced and sophisticated treatment options, and the rise of specialized positions that support patients from the time of diagnosis through treatment, survivorship, and end-of-life care. Moreover, the global oncology nursing workforce is also essential to achieving Sustainable Development Goals like 3.4 (reduce non-communicable disease morbidity by a third by 2030) and 3.8 (universal health coverage). [11]Global perspectives in oncology nursing will be discussed in this article within the framework of evidence-based practices, specialized education, research, policy, the profession, and practices.

Evidence-Based Practice

Evidence-based practice (EBP) is a newer perspective for modern and advanced practices. These are vital to enhancing patient outcomes in terms of decreasing morbidity and mortality and the standard of healthcare. It involves gathering the best available research and engaging patients about their individual

preferences to make decisions about health care. [5] Providing options to the patient for choosing their treatment preferences is a way to empower the patient in their decision-making. This all required global access to information for tapping the best evidence available through quality research throughout the globe. In the present era of information technology, things could be shaped in a better way by utilizing technology. [7] The practices of cancer care developed through various research evidence available and are a result of knowledge translation efforts. These are important to improve patient outcomes, harmonize measures, and accelerate the translation of evidence into practice in cancer care services. [12]

Specialized education

It is a source of capacity-building for oncology nurses through access to both basic and specialized nursing education. Earlier, nurse education was shaped by dominant ideologies that they were assistants to physicians, but now this is heavily influenced by power relations, effective partnerships, effective, efficient, cost-effective, and equitable population health policies, advocacy strategies, proper handling of information and communication technologies, etc. [1] Numerous studies have demonstrated the advantages of bachelor's degree-level education for nurses in terms of improving patient outcomes. In the context of creating global nurses, the education imparted to them must be based on national and international standards and competency frameworks. This guides the fundamental knowledge, skills, and competencies required by oncology nurses. A shift is required to cater to diversity in learning styles and enhance access to (and accessibility of) basic and specialist education in nursing. As the world is very diverse in resources, some countries have pools of resources while others are deficient. For developing equity-based societies in terms of health care services, it is necessary to promote equity in the distribution of knowledge, resources, and power to promote inclusivity in nursing education and professional growth. [13] To promote equity in nursing education, particularly at the graduate level, it is required that there be enhanced accessibility of education, recognition of specialist cancer nursing qualifications, and the development and co-design of open access education for oncology nurses.

Research

A new nursing workforce is capable of teaching, learning, research, and scholarly activities as the global nursing competency shift in nursing qualifications to university-level education has happened. As a basic nursing competency, she can critique and interpret research while being competent in the design and conduct of clinical research. She has the ability or core skill to translate evidence at the specialist and advanced practice levels. Nursing research plays a major role in improving our understanding of what it is like to live with and recover from cancer, as well as in developing and implementing treatments meant to improve quality of life throughout the whole cancer journey. Future investigations should focus on the sustainability of practice changes and the de-implementation of no

longer effective interventions, which could be a challenge in the rapidly changing healthcare environment. Future efforts should be toward harmonizing measures toward increasing the quality and advance of cancer care delivery and accelerating the uptake of evidence into clinical practice. [12]

Policy

A policy is a definite course or method of action selected from among alternatives and considering given conditions to guide and determine present and future dreams. Policies provide guidance, consistency, accountability, efficiency, and clarity of vision. They do have the potential to be important change agents. Various national and international organizations have supported the idea that there are increased possibilities for nurses to impact policy and increase engagement within the nursing profession as they possess the necessary skills and experiences in addition to specialized, higher-level education. Good policies always help navigate through the better developmental opportunities of a profession. Inception and development of any new program require good policy formation, which will help in the future.

Profession and practice

Continuous newer developments in cancer treatment modalities and care models, such as complex and personalized cancer treatments, nurse-led models of care, and transitions to outpatient-based care, are opening new opportunities and arenas for work. [1] All these care models have influenced the expansion and diversification of oncology nursing roles. There is a lot of evidence to support the beneficial effects of nurse-led interventions on cancer patients, supportive care outcomes, and symptom control. While mentioning specialized oncology nurses, one should not forget about the contribution of registered nurses in patient care settings in the face of emerging workforce challenges. It is obvious that developing countries have their challenges and will take a long time to create something like a specialized, trained oncology nurse. To fill the gap, experienced registered nurses who have developed their skills in cancer care through practice, exposure, and learning by doing will be a better substitute. Owing to their expertise and ongoing nursing education programs, they are providing exceptional care services and are making great progress in this regard. It has always been challenging to start with and develop a new field of specialization from its inception. Challenges are global and region-specific too. Some of those are as follows:

Challenges to developing a robust oncology nursing workforce: Nurse shortages: There are lots of national and international agencies that usually talk about the nurse-patient ratio, and it is a very common occurrence that we always fall behind those norms. This is alarming too; despite having the largest population in the world, there is a lack of skilled healthcare practitioners to meet the demands of the country. This is not only the problem that we are not creating enough skilled staff, but we are also failing to retain them, motivating them to go for higher education. Recruitment barriers While talking about

oncology nursing, there is always suspicion regarding staff safety. There are perceptions that oncology is a demanding specialty with complex care and hazardous work environments while rendering services. It is an obvious fact that cancer treatment means handling lots of cytotoxic drugs, ionizing radiation, and all that.

Burnout: An oncology nurse has not only physical burnout but emotional or psychological burnout too. They are not only physically overburdened but also emotionally and psychologically. In an area like oncology, where patients usually have chronic morbidity and limited outcomes, it becomes obvious that they have burnout. These burnouts are not only physically exhaustive but also cause a loss of interest, decreased enthusiasm, limited outcomes, etc. The frequent addition of newer innovations in cancer care becomes challenging in the absence of a specialized oncology nursing workforce. These additions are so frequent that until one is accustomed to presenting innovation, another comes.

Lack of research mentors

This is an obvious challenge in developing countries where there are almost negligible nurse researchers or Ph.D. nurses for mentorship and guidance.[5] Furthermore, motivation for such courses and that higher level of study is also lower as there are no special benefits or acknowledgments provided by policymakers or people sitting in higher strata. For years now, authorities have not developed a single position that matches their talents and abilities, even though nurses are going for post-doctoral fellowships in education as well. Underfunded and under-resourced healthcare systems are contributing to clinical safety issues too, be it in the context of staff safety or patient safety. There is less motivation and enthusiasm shown by leaders, policymakers, and all others. Handling cytotoxic medication, risky diagnostic tools, ionizing radiation, and all are always a risky affair and a threat to staff and patient safety. Underrepresentation in decision-making is always a big challenge for nursing personnel. Even after being highly skilled, educated, and experienced, nurses have hardly a voice in decision-making. Having a say in policymaking is important for inculcating self-respect and the empowerment of specialized clinical nurses.

Frequently changing workforces

This is a bigger challenge in developing countries as many of the experienced nurses from here are migrating for better opportunities, better remuneration, and better working conditions, all to developed countries. This is a great burden for developing countries because, despite limited resources, skilled nurses are being fostered, and they are just moving out. This is a vicious cycle that keeps going on.

Economic and linguistic disparities In large-scale developing countries, the presence of disparities is a common occurrence. Making services available everywhere is a tougher job in such a diverse population. It is required that the standards of nursing services be equity-based, i.e., the maximum distribution of resources should be in the underserved area. It is not just physical diversity or the external one, but we do encounter a failure to recognize diversity within the nursing workforce.

Challenges in specific contexts:

There is inconsistent implementation of educational standards. Even though standardization of education in the curriculum is already there, there is an underdeveloped mechanism to monitor how strictly these standards are adhered to. Still, we are lingering on “creating jacks of all trades rather than going for specialization." [8] There are gaps in evidence demonstrating the clinical and educational effectiveness of cancer nursing education, and there are also limited efforts to integrate research into clinical research modules.

Research

Research in nursing is still in its budding phase. Many studies have shown that, even though research is taught in the nursing curriculum, specialty nurses only devote 0% to 5% of their time to research, and as little as 2% in the setting of oncology. [8] There is a lack of doctorate-holding academic nurses too, which is making things more difficult to handle. Even though we have a little specialization at the education level, there are differences in the availability of specialized nursing education and the employment of specialists.

Profession and practice

There is no position or post as a specialized oncology nurse, or precisely, for the last many decades, not even a single post for a specialized nurse has been created in the public sector. We have the older nomenclature too, which disguises the qualifications, education, and aptitude of nurses working in various capacities. Until nurses are recognized as highly skilled and qualified people, things will not start changing. It is disheartening that even after attaining a doctoral degree, no special recognition is given to them.

Policy making Numerous studies have demonstrated the limited participation or influence of nurses in policymaking at local, national, and international levels. Even though an increasingly knowledgeable and skilled nursing workforce is thereafter adding degree- or university-level education. [8] Despite acknowledgment and reporting of that, nurses have underrepresentation.

Way out

There is always a way out of every problem, and the same is true for these too. Some suggested ways out are the following: Innovative recruitment strategies, retaining a skilled workforce, and conducting continuous training are very essential to developing a robust workforce. [14] Innovative recruitment strategies could be an icebreaker in selecting the right person at the right place at the right time. Things, as per the changing demands of the profession, can be accommodated at the recruitment level. It should not only check the educational qualifications or efficiency of nursing skills but also how good one is

at handling day-to-day stress, being technologically sound, comfortable working as a team, accommodating or adaptive to frequent changes, etc. For that, in the screening test, one can go for giving teamwork assignments, prompting things to be sorted out, etc. Better working conditions, safe infrastructure, better opportunities, and recognition are essential requirements for retaining their skilled workforce, or, as they say, preventing brain and skill drain. As mentioned, many times cancer treatment is still evolving, and for that, lots of innovations and new knowledge are added every day. Keeping oncology nurses abreast of all these new add-ons through continuous education programs is very essential for imparting effective and efficient specialized nursing care.

Onboarding specialized education and continuing education programs

Adding specialized courses at the university level, designing curriculum according to global standards, arranging well-qualified faculties until there is a pool of qualified people in that area, and ensuring the availability of standard books for the same. At the same time, for new updates, continuing education is the gold standard. This is one of the most critical parts of the upgrading of knowledge and skills. State certificate boards put a lot of work into requiring a particular number of hours spent in class each year to renew the certificate. But this is not carried out at institute levels to make the arrangements for facilitating them to get these hours mentioned. Things ought to move more quickly at ground level to get the most benefit out of them.

Occupational safety measures These are very necessary to provide enough confidence among the new entrants to select this field. There are lots of practices that make people skeptical about choosing this field, like the use of cytotoxic drugs, ionizing radiation, etc. In such a scenario, it becomes important to alleviate the fear of healthcare practitioners about choosing this specialized field of practice.

Burnout prevention interventions Such interventions are very important to keep people motivated, energetic, emotionally fit, and ready to face any challenge. When one is working in such a physically exhausting and emotionally stressful situation, it becomes compulsory to adopt burnout prevention interventions such as prioritizing boundaries, developing a work-life balance, prioritizing self-care, exercising the body and mind, regularly taking breaks, maintaining a support network, etc. At the institute level too, these things need to be accommodated for better outcomes.

Retention of experienced oncology nurses

All the reports indicate the incidence of cancer disease is increasing, and survival is minimal in this part of the world. Furthermore, trained nurses are migrating to the developed world from this part of the world. When the load of disease is so high, there is always an increase annually in the incidence of disease. In such conditions, it becomes necessary to retain their trained nurses by any means. There is a need to develop a meaningful system and policy response to the challenges through meaningful engagement and involvement of nurses. Equal, consistent recognition and value of the role: for the

empowerment of nurses and their recognition, equal and consistent value must be given to the nurses, making them a part of their broader healthcare system in a meaningful way. Create new posts to accommodate the specialized oncology nurses and rename the posts so that they depict their qualifications.

Digital micro-credentials and continuing professional development programs : These kinds of programs become important where specialist cancer nursing courses at the university level are unavailable for capacity building. This should be equity-based, and more resources should be diverted to develop those areas where availability of such facilities is unavailable or scarce to provide standardized care to cancer patients globally. Use of co-design methodology within the field of cancer nursing and consulting with professionals who know specialized areas of cancer nursing. Mentorship or special academic programs can be inducted to expedite the solution. Conducting research towards addressing the education-practice gap. Being a scientific profession, nursing is constantly criticized for lacking theoretical proof to justify its practices. Even though there is a lack of standard books in nursing education, in such conditions, it becomes important to implement evidence-based practice programs to broaden the theoretical base of the nursing profession. The evidence in the fields is being created through multi-level research.

Address under-funded and under-researched topics in cancer care

It becomes essential to identify the areas that are underfunded and under researched, though they are important parts of cancer care, such as cancer prevention, quality of life, and cancer survivorship. This is required for the overall development of the field.

Participation of nurses in policy making

It is urgent to ensure the participation of nurses at the national and international levels in shaping policy. These policies are important for the overall growth of the field of specialized nursing care. Good policies lead to the exponential growth of the field, while bad ones take things in reverse.

Conclusion

In the face of the exponential growth of cancer as a public health burden, the future of the oncology nursing workforce is reflected in the call from international bodies such as WHO for nurses to move to higher levels of leadership, advocacy, and policymaking (i.e., national cancer control planning). [11] Effective oncology services can only be provided by a robust oncology nursing workforce that has acquired through specialized education and clinical training. Advanced surgeries, radiation therapy, and immunotherapies are examples of complex cancer therapies and technologies that require nursing assistance from qualified and experienced specialists. This also requires substantial effort to overcome nursing shortages and barriers to nurse recruitment to oncology and that could be achieved through

innovative recruitment strategies, onboarding, continuing education programs, occupational safety measures, burnout prevention interventions, etc. At the policy level too, it is high time to move away from a "one-size-fits-all" strategy to country- or region-specific policies depending on cancer burden and availability of resources.

Oncology nurses have the potential to coordinate care across the cancer care continuum, from diagnosis to survivorship and end-of-life care. As cancer care continues to evolve, nurses will play a key role in the field of oncology, whether as specialized oncology nurses providing clinical care or as nurse researchers spearheading groundbreaking oncology research. There is also an urgent need to strengthen cancer registry programs for gathering accurate and real-time data by leveraging information technology networks. Governments and policymakers should invest in initiatives for mapping cancer care resources and the oncology workforce before it is too late.

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To Assess The Knowledge Regarding Radiation Dermatitis Among Patient Relatives of Oncology Patients : A Original Article

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Abstract: Aims and objective: The present study aimed to assess the levels of practices towards Radiotherapy induced skin reactions among attendants of cancer patients.

Methodology: In present study, quantitative approach and descriptive research design were found suitable to answer the research question. The sample size was 100 attendants of cancer patients who receiving radiotherapy. The purposive sampling technique was applied for sample selection.

Results: The study highlighted that the majority of attendants (29%) were from 31-40 years. The most of attendants (63%) were male while remaining 37% were female. As per relationship with patient, majority of the attendants (35%) were spouse followed by 32% were children. The findings communicated that out of 100 samples, majority of them (60%) were having average practice followed by 32% have good practices towards radiotherapy induced skin reactions. Only 8% were having below average practice towards radiotherapy induced skin reactions. Additionally educational qualification, previous experience of attendant, attendant working in health care sector and duration of illness of the patient were significantly associated with levels of practice.

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Introduction

Head and neck cancer is the eighth common type among all cancer types all over the world.[1] The treatment comprises surgery, radiotherapy, chemotherapy or a combination escorted by restoration therapy, and social support.[2] Radiotherapy leads to irreversible loss of the reproductive integrity, the cell cycle necessary for cell growth, apoptosis, and necrosis of cancer cells.[3] Conventional fraction size ranges from 1.8 to 3 Grays (Gy) per fraction over 4–6 weeks.[4] The accumulative dose of radiation for the primary treatment of head and neck cancer treatment is 60–70 Gy, depending on the irradiation of the tumor.[5] Ionizing Radiotherapy is used along with concurrent chemotherapy is the standard treatment in locally advanced head and neck cancers. Radiation treatment is commonly delivered in the form of high energy photons through an external beam. This results in ionization of electrons that cause direct strand breaks of cellular DNA and the release of free radicals, resulting in cellular damage to both normal and tumor cells. [6] A complex, coordinated process that occurs in three overlapping stages: inflammation, proliferation and remodeling . Radiation disrupts the normal process of wound healing at various stages. Pathologic changes include cellular depletion, extracellular matrix changes, and microvascular damage resulting in local tissue hypoxia. [7] Although effective in treating head and neck cancers, irradiation of overlying normal tissues can result in severe complications. Tissues with high-cell turnover, including the skin, are most frequently affected. Radiation dermatitis is the commonest side effect encountered during definitive radiotherapy. Radiation depletes the basal cell layer of skin and initiates a complex sequence of events leading to dose-dependent acute or late sequelae. The incidence and severity of radiation dermatitis depends upon multiple patient and treatment related factors. With the use of megavoltage radiation and implementation of conformal radiotherapy, the incidence of severe radiation dermatitis has reduced significantly. [8] The treatment is associated with radiation dermatitis which causes severe symptoms to the patient, leads to treatment breaks, decreases disease control rates and impairs the quality of life of the patients. We here in describe a case report of locally advanced carcinoma of larynx that developed grade III Radiation Dermatitis while receiving radical chemoradiation.

Table-1: frequency and percentage distribution of sociodemographic variables of the attendants.

N=100

S. No.	Demographic variables		Frequency	Percentage
1.	Age groups	21-30 Years	23	23%
		31-40 Years	29	29%
		41-50 Years	26	26%
		51-60 Years	22	22%
2.	Gender	Male	63	63%

		Female	37	37%
3.	Relationship with patient	Spouse	35	35%
		Siblings	25	25%
		Children	32	32%
		Others	18	18%
4.	Education	Primary	17	17%
		Secondary	26	26%
		Higher secondary	25	25%
		Graduation	32	32%
5.	Occupation	Government	16	16%
		Private	26	26%
		Self employed	31	31%
		Unemployed	27	27%
6.	Duration of illness of the patient	Less than one year	20	20%
		1-3 years	37	37%
		4-5 years	30	30%
		Above 5 years	13	13%
7.	Patient is sole earner	Yes	46	46
		No	54	54
8.	Previous experience	Yes	32	32%
		No	68	68%
9.	Information availability	Yes	74	74%
		No	26	26%
10.	Source of information	Doctor	30	40.54%
		Health care personnel	28	37.84%
		Health magazine	09	12.16%
		Mass media	7	9.46%
11.	Working in healthcare sector	Yes	16	16%
		No	84	84%
12.	Alternative availability of caretakers	None	18	18%
		1	33	33%
		2	38	38%
		3 or more	11	11%
13.	Alteration in role of attendant	Yes	59	59
		No	41	41

Table-2: Levels of practice towards radiotherapy induced skin reactions among the attendants.

N=100

S. No.	Level of practice	Frequency	Percentage
1.	**Below average practice**	**08**	**08%**
2.	**Average practice**	**60**	**60%**
3.	**Good practice**	**32**	**32%**

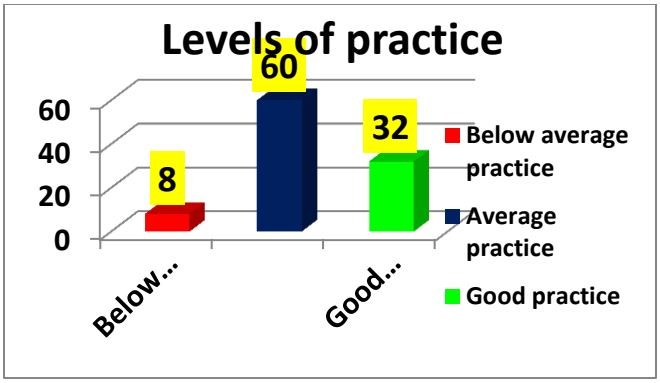

Figure-1: Levels of practice towards radiotherapy induced skin reactions among the attendants.

Table-3: Mean , SD and standard deviation of practice score towards radiotherapy induced skin reactions among the attendants.

N=100

S.No.	Value	Practice score
1.	Mean	9.75
2.	Median	10
3.	Standard Deviation	2.54

Table-4: Association between selected socio-demographic variables and levels of practice among the attendants. **N=100**

Demographic variables		Levels of Practice			Calculated χ^2 value	Significance
		Below average	Average	Good		
Age (in years)	21-30 Years	02	12	09	4.479 df-6	Not significant
	31-40 Years	02	15	12		
	41-50 Years	03	17	06		
	51-60 Years	01	16	05		
Gender	Male	05	41	17	2.072 df-2	Not significant
	Female	03	19	15		
Educational qualification	Primary	02	12	03	20.636 df-6	Significant
	Secondary	03	18	05		
	Hr. secondary	02	19	04		
	Graduation	01	11	20		
Relationship with patient	Spouse	02	22	11	9.141 df-6	Not significant
	Siblings	02	15	08		
	Children	01	19	11		
	Others	03	04	02		
Occupation	Government	01	09	06	3.330 df-6	Not significant
	Private	02	14	10		
	Self employed	02	18	11		
	Unemployed	03	19	05		
Previous experience of attendant	Yes	02	12	18	12.799 df-2	Significant
	No	06	48	14		
Attendant working in health care sector	Yes	02	05	09	6.606 df-2	Significant
	No	06	55	23		
Duration of	Less than one	03	16	01	15.513	Significant

illness of the patient	year				df-6	
	1-3 years	02	25	10		
	4-5 years	01	14	15		
	Above five years	02	05	06		

DISCUSSION

The present study aimed to assess the levels of practices towards Radiotherapy induced skin reactions among attendants of cancer patients. The findings communicated that out of 100 samples, majority of them (60%) were having average practice followed by 32% have good practices towards radiotherapy induced skin reactions. Only 8% were having below average practice towards radiotherapy induced skin reactions. Kole AJ et al (2017) revealed that understanding the anticipated onset and timing of symptoms, as well as the appropriate scoring methods for tracking symptom intensity over time, is essential for managing patients with radiation dermatitis.

When possible, therapy recommendations should be based on evidence. In context to our findings, Pareek S et al (2017) conducted a study to identify the knowledge and practices of cancer patients for management of Radiation induced skin reactions. The research communicated that cancer patients have limited knowledge towards radiotherapy induced skin reaction. The findings revealed that age, gender, relationship with patient and occupations were not significantly associated with levels of practice. Additionally educational qualification, previous experience of attendant, attendant working in health care sector and duration of illness of the patient were significantly associated with levels of practice.

CONCLUSION:

The present study aimed to assess the levels of practices towards Radiotherapy induced skin reactions among attendants of cancer patients. Skin reactions can range from a small redness to ulceration. So an effective management is necessary to prevent the skin from hazards of radiation. It is clear that radiation induced skin reactions cannot be avoided but if we take some positive efforts than it can be managed. So we have to provide a meticulous skin care to patient, during and after the radiotherapy to protect the skin from radiation induced skin reactions. There is need to enhance the existing practices of attendants of cancer patients towards radiotherapy induced skin reactions.

LIMITATIONS

The study was conducted among limited sample size. The study was conducted at single setting with a limited duration. In this study, only practices towards radiotherapy induced skin reactions were assessed. The self-expressed practice checklist was developed as no standardized tools were available.

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