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Weekly Versus Three-Weekly Cisplatin in Concurrent Chemoradiotherapy for Head and Neck Squamous Cancers: A Prospective Study

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Abstract

Concurrent chemoradiotherapy (CT-RT) is often used as definitive treatment for patients with locally advanced head-and-neck squamous cancers (HNSCC). Concurrent cisplatin administered 3-weekly (100 mg/m^2 on days 1, 22 and 43 of RT) is the accepted standard-of-care, but causes significant toxicity. This has resulted in altered administration schedules, including weekly (40mg/m^2) regimen, with conflicting reports on identifying optimal schedule. We compared acute toxicity and response rates between patients on CT-RT receiving weekly and 3-weekly cisplatin in this prospective study. 56 patients received either weekly (40 mg/m^2; 36 patients) or 3-weekly (100 mg/m^2; 20 patients) cisplatin concurrently with 3D-conformal radiotherapy (70 Gy/35#/7 weeks) based on physician or patient preference. Patients receiving weekly schedule were older (57.9 vs 50.3 years; p=0.03), but the groups were comparable in other variables including gender, primary site and stage.

Acute toxicities (myelosuppression, mucositis, dysphagia, weight loss, etc.) were frequent but similar betweengroups, excepting a significantly lower nausea/vomiting in weekly schedule (≥grade II in 8.3% vs. 50%; p=0.03). Two patients, both on weekly chemotherapy, expired of aspiration pneumonia during treatment. Complete response rates at 12 weeks were similar between the cohorts (77.7% vs 85% CR, respectively; p= 0.61). At median follow-up of 12 months (range: 4-21.5 months), the estimated disease-free survival (DFS) was comparable between regimens (72% and 78% at 15 months, respectively; p= 0.550). We conclude thatweekly-cisplatin is associated with lower incidence of nausea/vomiting, but has otherwise comparable acute toxicity profile to 3-weekly schedule. Response to treatment and DFS are similar between the two.

Keywords: Sensitizer Chemotherapy; Oral Cancers; Definitive Radiotherapy; Acute Toxicity; Treatment Compliance.

Introduction

Head and neck squamous cancer (HNSCC) is one of the commonest cancers in India, and constitutes about one-third of all cancers [1]. At our institution HNSCC accounts for around 30-40% newly registered cases, and 60-70% present with locally advanced disease. External beam radiotherapy with concurrent chemotherapy is the standard-of-care in locally advanced HNSCC, but has significant toxicity. Cisplatin administered on a three-weekly basis at 100 mg/m^2 on days 1, 22 and 43 of RT is considered as the standard concurrent chemotherapy administration schedule. However, due to severe toxicity of the regimen, alternative schedules that deliver smaller and more frequent doses of chemotherapy have been tried and reported [2-3]. Weekly cisplatin regimens have been increasingly used in large part because of their relative ease of administration and general impression of reduced toxicity [4-6]. Both schedules are being practiced at our center. This study attempts to compare standard 3-weekly Cisplatin and weekly Cisplatin concurrent chemotherapy in CT-RT for locally advanced HNSCC.

Materials and Methods

This prospective comparative study was conducted on patients who were considered for treatment with definitive CT-RT for HNSCC between October 2014 and June 2016 after getting institutional ethical committee clearance.Inclusion criteria included locally advanced disease (Stages III, IVa or IVb),Karnofsky Performance Score ≥60 % and normal baseline hematological and renal parameters. Patients on adjuvant CT-RT were excluded, as were those with associated medical illnesses that would render them unfit for concurrent Cisplatin andthose with metastatic disease at presentation. Patients who discontinued treatment for non-medical reasons were also excluded from further analysis.

Radiotherapy was administered to all eligible patients by 3D-Conformal Radiotherapy (3DCRT) to a dose of 70 Gy in 35# delivered over seven weeks. All patients were immobilized using a thermoplastic mask in a supine position with arms by the side, and treatment was delivered on Elekta PRECISE Linear accelerator using 6 MV photon beams.

All patients were planned for either weekly or 3-weekly concurrent cisplatin based on the discretion of the treating physician or preference of the patient. Patients considered for 3-weekly Cisplatin 100mg/m^2 were hydrated beginning 24 hours prior to administering chemotherapy. Chemotherapy was administered over 60 minuteswith adequate prehydration, intravenous mannitol and antiemetic coverage. Patients considered for weekly cisplatin received 40mg/m^2 delivered as infusion in normal saline over 60 minutes with adequate prehydration,intravenousmannitol and antiemetic coverage. All patients received post-chemotherapy hydration and symptomatic care as required. Consent was taken prior to starting of radiotherapy and prior to each chemotherapy injection.

Blood counts, renal parameters, serum electrolytes and acute toxicitieslike mucositis, dermatitis, nausea/vomiting, dysphagia, etc. experienced by the patients were recorded every week. Toxicities were graded according to RTOG and CTCAE guidelines [7,8].

The tumor response was determined at three months after the completion of treatment. Patients were classified as having residual disease if the disease persisted at three months following completion of RT. Loco-regional recurrence was defined as any new histopathologicallyconfirmed lesion at the primary site or regional lymph nodes, after a period of three months post treatment. Disease Free Survival (DFS) was defined as the period from the date of completion of radiotherapy to local, regional or systemic relapse.

Chi-square test was used to analyze the variation between the two regimens. Survival curves were estimated according to Kaplan-Meier method, and log-rank test was used for statistical comparison. All data were analyzed with Statistical Package for Social Science (version 15; Chicago, IL), and a p-value of < 0.05 was considered statistically significant.

Results

A total of 56 patients meeting the study requirements were enrolled into the study. Among them, 36 patients received weekly cisplatin and 20 patients received 3-weekly cisplatin. The mean age of the patients was 56 years (range: 30-70 years) with 47 patients (83.9%) being males. The distribution of demographic variables between the two groups is shown in Table 1.

Two patients (3.6%) expired while on treatment with suspected aspiration pneumonia. Both of them had received weekly chemotherapy. The remaining 54 patients completed the prescribed dose of radiotherapy, though 14 (25%) had rest-periods in between due to toxicity, mostly due to aspiration pneumonia (six patients). Febrile neutropenia was noted in one patient. The mean treatment duration was 47 days in both the study groups (p= 0.568). However, compliance to concurrent chemotherapy was significantly superior among patients receiving weekly cisplatin, with 22 patients (61.1%) receiving at least 85% of prescribed dose compared to six patients (30%) receiving 3-weekly Cisplatin (p=0.026).

Other treatment toxicities included hematological toxicity, predominantly leucocytopenia, and dyselectrolytemias, weight loss, oropharyngeal mucositis and xerostomia. Leucocytopenia and neutropenia set in earlier in the 3-weekly arm, with 65% (13 patients) experiencing ≥ grade I toxicity by the third week compared to 27.7% (10 patients) in weekly arm (p=0.024). However, the overall incidence of hematotoxicity during the entire course was similar between the two arms, and none of the patients developed grade IV toxicity. The details of other acute toxicities are shown in Table 2.

Excluding the two patients who expired during the course of treatment, patients were evaluated for response at the end of 12 weeks following treatment completion. In total, of the remaining 54 patients, 81.5% (44 patients) had complete response and 18.5%

(10 patients) had persisting residual disease at 12 weeks. Residual disease was most frequently observed in oral cavity (five patients) followed by larynx (three patients) and hypopharynx (two patients). The probability of harboring a residual disease after treatment completion was not statistically associated with the primary stage, sub-site or degree of differentiation. Similarly, on comparing the response rates between the chemotherapy regimens, there was no statistical difference (77.7% vs 85% complete response in weekly and 3-weekly arms, respectively; p= 0.61). On sub-group analysis, response rates were no different between the two groups with respect to stage of disease, node positivity or grade of tumor.

The patients were followed up for a median duration of 12 months (range: 4- 21.5 months) after treatment completion. Three patients who had complete response at 12 weeks assessment developed loco-regional recurrence on follow up. Metastatic disease as first evidence of recurrence was not noted in any patient. Disease-free survival (DFS) analysis was performed in 54 patients, after excluding the two patients who had expired while on treatment. The estimated DFS at 15 months was comparable between weekly and 3-weekly chemotherapy regimens (72% and 78%, respectively; p= 0.55) (Figure 3). Patients receiving all three courses of 3-weekly chemotherapy appeared to have a superior outcome compared to patients who received only two courses of 3-weekly cisplatin, but the difference in DFS was not statistically significant (p= 0.155). Similarly,there was no impact of treatment compliance on DFS among patients receiving weekly cisplatin. On sub-group analysis, DFS was comparable between the two arms irrespective of site of primary, stage of disease or presence of node metastasis.

Table 1: Distribution of patient characteristics between the weekly and 3-weekly arms

Variable	Study arms		P value
	Weekly chemotherapy (n=36)	3-weekly chemotherapy (n=20)	
Mean age in years (range)	57.9 (31-70)	50.3 (30-68)	0.03
Gender			
Males	30 (83.3%)	17 (85%)	0.871
Females	6 (16.7%)	3 (15%)	
Site of primary			
Oral cavity	6 (16.7%)	10 (50%)	0.182
Oropharynx	9 (25%)	4 (20%)	
Hypopharynx	10 (27.8%)	4 (20%)	
Other sites	11 (30.6%)	2 (10%)	
Grade of tumor			
Grade I	9 (25%)	10 (50%)	0.24
Grade II	15 (41.7%)	7 (35%)	
Grade III	12 (33.3%)	3 (15%)	
T stage			
≤ T2	7 (19.4%)	5 (25%)	0.431
≥ T3	29 (80.6%)	15 (75%)	
N stage			
N0	6 (16.7%)	7 (35%)	0.297
N1	8 (22.2%)	3 (15%)	
≥ N2	22 (61.1%)	10 (50%)	

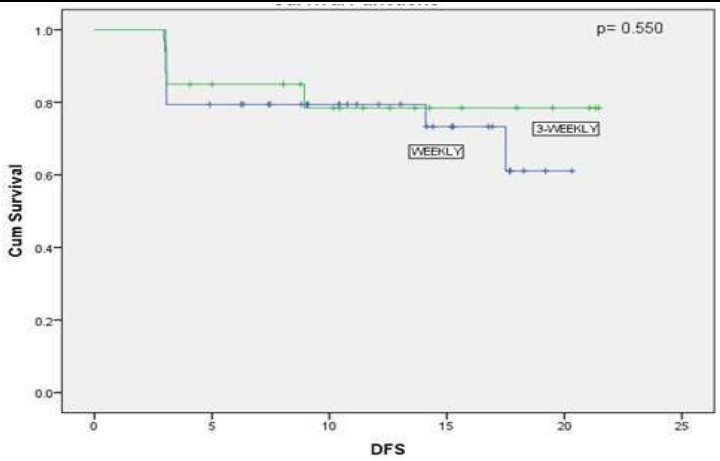

Fig. 1: Disease free survival in months among the weekly and 3-weekly regimens (p=0.55)

Table 2: Comparison of acute toxicities between the weekly and 3-weekly arms

Toxicity	Study arms		P value
	Weekly chemotherapy (n=36)	3-weekly chemotherapy (n=20)	
Maximum hematological toxicity			
≤ Grade I	19 (52.8%)	7 (35%)	0.353
≥ Grade II	17 (48.2%)	13 (65%)	
Decreased Glomerular filtration rate			
< 25% from baseline	7 (19.4%)	3 (15%)	0.871
≥ 25% from baseline	29 (80.6%)	17 (85%)	
Dyselectrolytemia			
≤ Grade I	13 (36.1%)	8 (40%)	0.919
≥ Grade II	23 (63.9%)	12 (60%)	
Nausea and vomiting			
≤ Grade I	33 (91.7%)	10 (50%)	0.003
≥ Grade II	3 (8.3%)	10 (50%)	
Maximum degree of mucositis			
≤ Grade I	6 (16.7%)	5 (25%)	0.450
≥ Grade II	30 (83.3%)	15 (75%)	
Dysphagia at completion			
Grade I	13 (36.1%)	5 (25%)	0.570
≥ Grade II	23 (63.9%)	15 (75%)	
Acute skin reaction			
Grade I	22 (61.1%)	10 (50%)	0.487
≥ Grade II	14 (38.9%)	10 (50%)	
Weight loss			
≤ 10% of baseline weight	11 (30.6%)	10 (50%)	0.192
> 10% of baseline weight	25 (69.4%)	10 (50%)	

Discussion

This study evaluated the acute toxicities and outcomes of concurrent chemotherapy administered on a weekly basis with the accepted standard-of-care 3-weekly cisplatin in patients with locally advanced HNSCC treated with curative CT-RT. As the study was not randomized, with patients receiving either weekly or 3-weekly chemotherapy based on their own preference or at discretion of the treating physician, the weekly cohort was disproportionately larger. Moreover, the weekly group consisted of the older age groups compared to 3-weekly arm, reflecting the tendency of physicians preferring weekly sensitizer regimen among older patients [9]. However, the two arms were comparable with respect to other important variables such as gender, grade of tumor, stage of disease and presence of node metastases.

Considering 85% of planned chemotherapy dose administration as compliant, the compliance was significantly superior in the weekly arm patients when compared to patients receiving 3-weekly chemotherapy regimen. As an assertion to this, the total cisplatin dose received was 240mg/m^2 in the weekly group patients, which was significantly higher than patients on 3-weekly chemotherapy who received an average cumulative dose of 200 mg/m^2. This is attributable to the fact that almost 70% of patients on 3-weekly chemotherapy failed to receive the third course of concurrent chemotherapy. Weekly sensitizer chemotherapy is generally considered to be better tolerated than 3-weekly chemotherapy [10]. For instance, in a retrospective study conducted by Ho et al, weekly arm was more complaint, and none of the patients planned for 3-weekly chemotherapy received the third course of concurrent chemotherapy [11]. As a result, more patients were reportedly able to receive a significantly higher cumulative dose of cisplatin when they received it on a weekly basis.

There was a progressive increase in frequency and severity of acute toxicity with treatment in both the arms. The toxicities were comparable between the two groups, though myelosuppression, especially leucocytopenia, appeared to set in earlier in the 3-weekly group. Considering that both the groups had a similar overall incidence of hematological toxicity, it appears to be of lesser importance in determining the optimum regimen. A similar picture has been reported in other studies comparing the two sensitizer regimens [9,12,13].

Cisplatin induced nephrotoxicity was noted in both the study groups but the drop in creatinine clearance was never below 60 ml/min, and did not lead to withholding chemotherapy or modifying chemotherapy dose in any patient in our study.

Cisplatin is a well-known nephrotoxic agent, with a potential to cause severe, irreversible renal failure. The likelihood of developing cisplatin induced nephrotoxicity is known to increase with higher peak plasma free-platinum concentration [14]. Thus, in theory, a higher dose administration is more nephrotoxic. However, in reported clinical experience, frequency of cisplatin induced nephrotoxicity is similar between the 3-weekly and weekly schedules. In a retrospective study reported by Uygun et al. the incidence of Grade ≥3 renal toxicity, though lower with weekly Cisplatin than with 3-weekly Cisplatin, was not statistically significant [15].

Grade 3 mucositis was 18 % in the weekly arm and 25% in 3-weekly arm but there was no significant difference in severity of mucositis between the arms. There are reports that indicate potentially differing severity of mucotoxicity between the two schedules [12,16]. For instance, in a study by Tsan et al [12], patients receiving weekly cisplatin (40 mg/m^2) suffered significantly higher incidence of severe mucositis than patients receiving 3-weekly cisplatin.

Curative chemoradiotherapy for HNSCC is an intensive treatment, with known significant acute morbidity. Two patients in our study died as a consequence of aspiration pneumonia, a relatively frequent severe toxicity among patients on definitive radiotherapy for HNSCC [17]. Though both of these patients had received weekly cisplatin, since the two regimens were otherwise equivalent in terms of acute toxicity, it is unlikely that the weekly regimen predisposes to a higher incidence of aspiration.

No statistically significant difference noted in response rates or DFS between both the arms in our study. On sub-group analysis, DFS was comparable between the two arms irrespective of site of primary, stage of disease or presence of node metastasis, though the curves appeared to diverge within a few months in favor of the 3-weekly regimen for stage IV disease and node positive patients. There have been differing opinions regarding the efficacy of weekly cisplatin when compared to the standard 3-weekly regimen. While some researchers have reported equivalent outcomes [12,18], others have suggested that outcomes might be inferior with weekly regimen [16,19,20]. A recent metanalysis of 10 studies comparing weekly and 3-weekly regimens also suggests that 3-weekly dosing potentially improves overall survival on a longer follow up beyond five years [21]. More recent approaches have looked into the feasibility of a further reduced dose of cisplatin (6mg/m^2) administered on a daily basis and found it to be comparable, and even favorable in terms of acute toxicity, to the weekly regimen [22-24].

Our study has several limitations. Firstly, it was not a randomized study, though both the arms were comparable in all important variables other than age. Secondly, it involved a small number of patients, unequally distributed between the arms. Additionally, a short follow up prevents detailed outcome measurements and estimation of difference in overall survival between the two schedules, though from recurrence patterns in both arms it is reasonable to foresee an equivalence in survival between them. Despite these shortcomings, the two regimens appear to be comparable to each other in terms of acute toxicity and early outcomes.

Conclusion

Concurrent chemoradiotherapy with cisplatin administered on a weekly basis had a similar frequency and severity of acute hematological and gastrointestinal toxicities when compared to 3-weekly cisplatin, though it was associated with a relatively delayed onset myelosuppression and a substantially lower incidence of nausea and vomiting. Patients receiving weekly sensitizers were also more likely to receive a higher cumulative chemotherapy dose. Response to treatment and DFS were similar between the two concurrent chemotherapy regimens.

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Nil

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Knowledge, Attitude and Practice about Cervical Cancer & Screening among Female Staff of Medical Institute in Karnataka

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Abstract

Context: In India incidence and mortality due to cervical cancer is increasing every year and by 2025 it is expected to have 203,757 new cases and 115,171 deaths. Regular screening by Pap smear can reduce the cervical cancer incidence and mortality by 80%. *Aims:* To assess the level of knowledge of Cervical Cancer & Screening among Female Staff and to know their attitude and practice towards cervical cancer & prevention in a tertiary institute in Karnataka. *Settings and Design:* Descriptive cross sectional study was carried out for duration of 3 months from June 2014 to August 2014. *Methods and Material:* Female staff associated with the institute (Doctors, Technicians, Nursing and office staff) formed the study population. After taking consent from the participants, questionnaires designed based on study objectives were provided and were requested to fill up to the best of their knowledge. *Results:* Respondents were divided into three groups. Doctors constituted group A (N-40), Staff Nurse and Lab technicians were 60 in number grouped as B and office staff (group C) were 10 in number. The observations were tabulated. *Conclusions:* Respondents though had adequate knowledge about screening tests never underwent Pap smear or any other screening tests. Most of the respondents failed to answer the correct schedule of Pap smear and thought screening should begin after 50 yrs or only when symptoms appear. This needs to be addressed, continued medical education or in house clinical lectures to update the recent changes in screening program should be conducted.

Keywords: Cervical Cancer; Awareness; Screening Test; Pap Smear.

Introduction

In India, one of the most common causes of death is cancer accounting for nearly 6% of all deaths. Cervical cancer is responsible for highest mortality in both urban and rural women. In the absence of all other diseases, a 30 year old Indian women has 0.7% risk of dying from cervical carcinoma, which is slightly higher than the risk of dying from perinatal complications. In India incidence and mortality due to cervical cancer is increasing every year and by 2025 it is expected to have 203,757 new cases and 115,171 deaths [1]. Regular screening by Pap smear can reduce the cervical cancer incidence and mortality by 80%. A randomized controlled trial has shown that even a single lifetime screening test significantly decrease the incidence of advanced cervical cancer [2]. In India till date there are no suitable, large scale, cost effective; population based screening programs to detect prevalence of HPV infection and preinvasive stages of carcinoma cervix. Hence, there is a need to introduce hospital or institution based screening programs. For a successful hospital based screening programme, Staff nurses and Physicians should be aware of cervical cancer and screening tests available for prevention and should encourage all female patients to undergo screening test. Hence this study was conducted to assess the level of knowledge of Cervical Cancer & Screening among Female Staff and to know their attitude and practice towards cervical cancer & prevention in a tertiary institute in Karnataka.

Material and Methods

This descriptive cross sectional study was carried

out for duration of 3 months from June 2014 to August 2014 in a tertiary medical institute in Karnataka. Female staff associated with the institute (Doctors, Technicians, Nursing and office staff) formed the study population. After taking consent from the participants, questionnaires designed based on study objectives which included risk factors, symptoms, diagnosis and prevention of cervical cancer, were provided and were requested to fill up to the best of their knowledge. A briefing was given to the participants about the objective of this study and assured confidentiality in collection of personal data. Data collected was analysed and tabulated. Permission to conduct the study was obtained from the Ethical committee of the Institute/University.

Results

Respondants were divided into three groups. Doctors constituted group A (N-40), Staff Nurse and Lab technicians were 60 in number grouped as B and office staff (group C) were 10 in number. The age of the respondents ranged from 20 to 55 years and > 90% of the participants were married. Results are tabulated in Table 1 & 2.

Table 1: Assessment of Knowledge about different aspects of cervical carcinoma

Knowledge Tested	Group A Number (%)	Group B Number (%)	Group C Number (%)
Risk Factors			
Early age at intercourse	40 (100%)	25 (42%)	03 (30%)
Multiple sex partners	40 (100%)	30 (50%)	05 (50%)
Multiparity	35 (87%)	28 (46%)	01 (10%)
Smoking	30 (75%)	05 (8.3%)	01 (10%)
Symptoms			
Vaginal Discharge	40 (100%)	30 (50%)	01 (10%)
PV Bleeding	40 (100%)	25 (42%)	01 (10%)
Pain abdomen	35 (87%)	25 (42%)	01 (10%)
Screening tests	35 (87%)	28 (46%)	02 (20%)
PAP smears	35 (87%)	05 (8.3%)	00 (00%)
VIA	30 (75%)	05 (8.3%)	00 (00%)
VILI	30 (75%)	05 (8.3%)	00 (00%)
When to begin screening tests			
Within one year post marriage	18 (45%)	05 (8.3%)	00 (00%)
After 30 years	18 (45%)	05 (8.3%)	00 (00%)
After 50 years	30 (75%)	25 (42%)	05 (50%)
Only when symptoms appear	40 (100%)	50 (83%)	05 (50%)
HPV Vaccine	30 (75%)	05 (8.3%)	00 (00%)
Ca Cervix is preventable and curable	35 (87%)	25 (42%)	05 (50%)

Table 2: Attitude & Practice about cervical cancer & prevention

Attitude & Practice	Group A Number (%)	Group B Number (%)	Group C Number (%)
Past H/o any symptoms of cervical cancer			
Vaginal Discharge	10 (25%)	25 (42%)	02 (20%)
PV Bleeding	06 (15%)	10 (17%)	00
Pain Abdomen	06 (15%)	10 (17%)	02 (20%)
Past H/o screening test	02 (05%)	03 (05%)	00
Reason for not visiting doctor/ screening test			
Not Aware	00	20 (33%)	06 (60%)
Aware but hesitate to visit a doctor	20 (50%)	25 (42%)	01 (10%)
Family members not supportive	00	05 (8.3%)	01 (10%)
Not Affordable	00	10 (17%)	01 (10%)
No time	15 (37%)	10 (17%)	00
Not necessary	15 (15%)	30 (50%)	04 (40%)
Willingness to undergo PAP if available locally	35 (87%)	40 (67%)	05 (50%)

Discussion

The incidence and mortality of cervical cancer remains high in India even after sixty five years of introduction of the Pap smear (cervical cytology) which is an effective means of identifying preinvasive lesions of carcinoma cervix. This can be attributed to multiple factors like lack of well organised screening programme, ignorance of people regarding the disease and time constraints of the doctors [3]. This study was conducted to know the level of knowledge of doctors, staff nurse and office staff and their attitude and practice towards cervical cancer & prevention in a tertiary institute in Karnataka. In the present study it was observed that all doctors had adequate knowledge about causes, risk factors, screening tests and HPV vaccine, however a few doctors were not aware that screening tests are required even in the absence of symptoms. It was found that inspite of adequate knowledge, uptake of screening test was low among doctors. Only 5% of doctors had undergone Pap smear previously. After this study around 75% of the doctors were willing to undergo Pap smear in future. In a similar study conducted by Amtullah Zareen [4] 99% of the doctors had good knowledge about cervical screening and only 27 doctors had undergone previous screening. He also observed in his study that nearly 77% of all subjects were willing to have future screening provided facility was easily accessible.

This study revealed 40 to 50% of the staff nurses were aware of the risk factors and the two most common symptoms of the cervical cancer. Dhodapkar SB [5] and colleagues have reported that Young age at first intercourse and multiple sex partners were correctly responded by 13% and 48% of participants respectively, as risk factors for cervical cancer. In a study done by Goyal A et al [6] in Surat, India 61.5% and 44% knew multiple sexual partners and intercourse at early age as risk factors .

Nearly 42% of the respondents thought cervical carcinoma is preventable and curable, 46% of them were aware of screening test, however, only 5% of the staff nurses knew about various screening tests available like Pap smear, Visual inspection of vagina with lugols iodine or acetic acid. It was also observed that >80% of the nurses were under the opinion that screening should be done after 50 years or only when symptoms appear. Previous history of vaginal discharge and vaginal bleeding was present in 25 and 10 respondents respectively. 90 to 95% of them never had a screening test, common reasons stated for not being tested were lack of awareness, thought it's not necessary or hesitation to visit doctor. Previous studies have reported that only 4% to 12% of study population had got Pap smear done on them [5,7,8]. However, after this study 67% had consented to undergo Pap smear if available locally.

Several studies in the literature have reported a low level of knowledge on HPV and cervical cancer among children, parents, teachers, community leaders and even health service providers of four developing countries (India, Peru, Uganda and Vietnam) [9].

The majority of the nurses had inadequate knowledge of transmission of HPV, causes, risk factors, symptoms, treatment and prevention of cervical cancer in a study conducted by Urasa M & Darj E. They also noted that most (116/137) of the respondents had never had a Pap smear, the most common reason (54.7%) was not knowing where to go for the test, followed by seeing no reason for the test (13.1%) [10]. In a study by Ali SF[11] thirty seven percent knew Pap smear as a screening test and only 37 out of 400 respondents were aware of the HPV vaccine. Jain SM [12] in his study observed that 58.6% were aware of Pap smear test but only 3% had ever undergone a Pap smear examination and 62.1% were interested to get their Pap done. In our study 75% of doctors and 8.3% of staff nurse had knowledge of HPV vaccine and 87% of doctors and 67% of nurses were willing to undergo Pap smear.

Participants in the group C were less in number and we observed that their knowledge was poor and there is need to educate them as they also indirectly form a link between patients and doctors.

Conclusion

Respondents though had adequate knowledge about screening tests never underwent Pap smear or any other screening tests. Most of the respondents failed to answer the correct schedule of Pap smear and thought screening should begin after 50 yrs or only when symptoms appear. This needs to be addressed, continued medical education or in house clinical lectures to update the recent changes in screening program should be conducted. Though the participants from nonmedical staff were few, none of them seemed to be having adequate knowledge. They also need orientation program as they are also a part of hospital team. Finally, as the saying goes "Change begins with me", all health care professionals and workers should be self encouraged to undergo screening test at least once and should also educate others to participate in screening programme.

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