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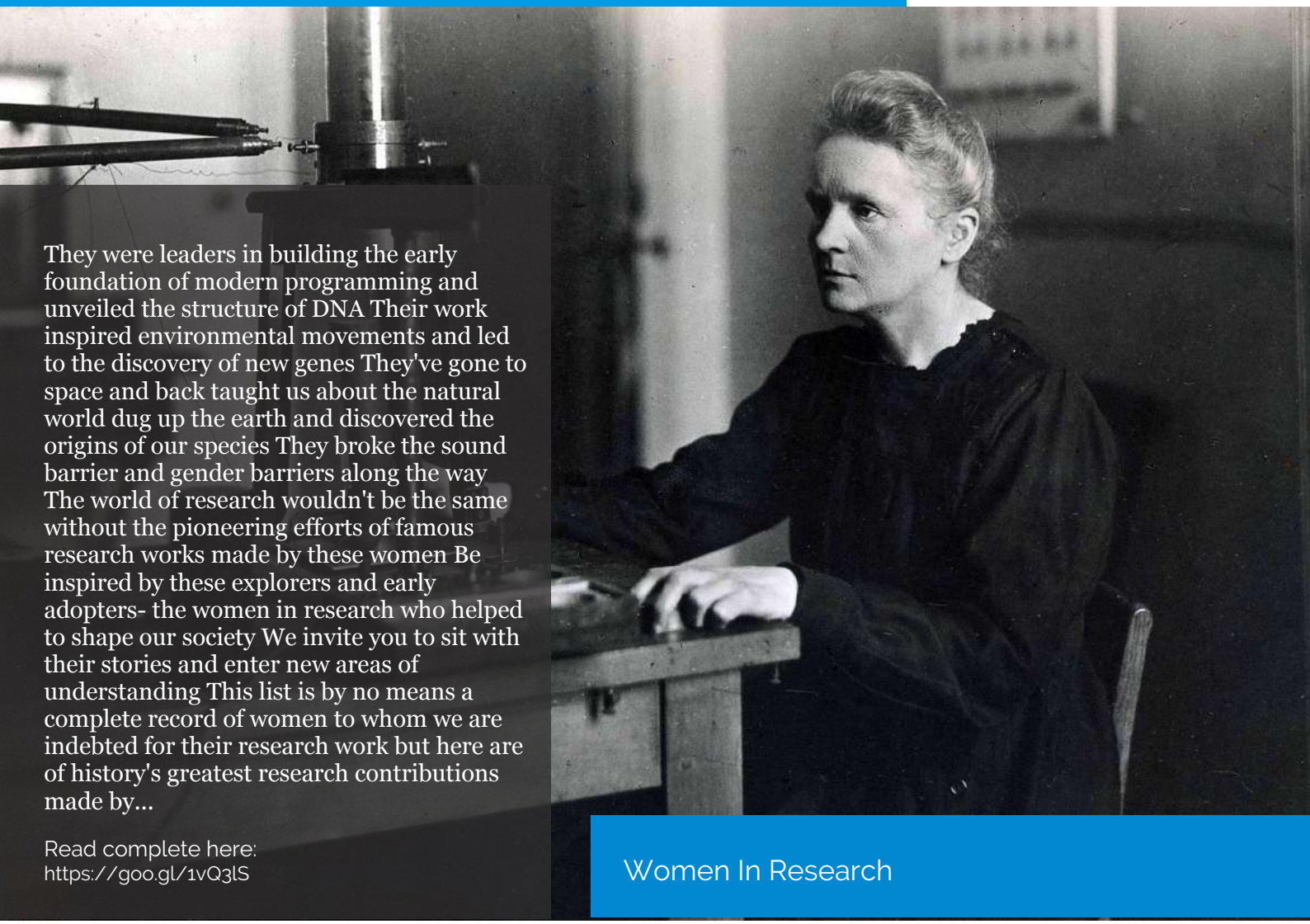

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Oxygen Therapy and Ventilation for the Management of Patients with Covid-19 in Intensive Care

Essohanam Tabana Mouzou MD, Sarakawabalo Assenouwe MD, Hamza Dolès Sama MD, Eyram Yoan Makafui Amekoudi MD, Tchetike Pikabalo MD, Lidaw Déassoua Bawe MD, Bawoubadi Abaltou MD, Awèréou Kotosso MD, Mamoudou Omourou MScN, Magnoudewa Poko MD, Gnimdo Mawa-eya Akala Yoba MD & Kadjika Tomata

Université de Kara

ABSTRACT

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Methods: We conducted a retrospective descriptive study at the Covid-19 center in Lomé. Patients who received oxygen therapy or mechanical ventilation in the intensive care unit (ICU), between September 1, 2020, and May 31, 2021, were included.

Results: Of 1073 patients admitted to the center, 134 patients were included in the study. The mean age was 60.53 ± 13.6 years and the sex-ratio was 1.27. One hundred and three patients (76,87%) had at least one comorbidity, including hypertension (55.22%), diabetes (41.79%), and obesity (15.67%). Median SpO2 was 83% (IQR 74-88%).

Keywords: oxygen therapy, intensive care, covid-19, lomé-commune hospital, togo.

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Oxygen Therapy and Ventilation for the Management of Patients with Covid-19 in Intensive Care

Oxygénothérapie Et Ventilation Dans La Prise en Charge Des Patients Atteints De Covid-19 en Réanimation

Essohanam Tabana Mouzou[α] MD, Sarakawabalo Assenouwe[σ] MD, Hamza Dolès Sama[ρ] MD, Eyram Yoan Makafui Amekoudi[ↀ] MD, Tchetike Pikabalo[¥] MD, Lidaw Déassoua Bawe[§] MD, Bawoubadi Abaltou[χ] MD, Awèréou Kotosso[ν] MD, Mamoudou Omourou[Θ] MScN, Magnoudewa Poko[ζ] MD, Gnimdo Mawa-eya Akala Yoba[£] MD & Kadjika Tomata[€]

RÉSUMÉ

Objectif général: Décrire l'oxygénothérapie dans la prise en charge de la Covid-19.

Méthodologie: Il s'est agi d'une étude rétrospective descriptive au centre de prise en charge de Covid-19 à Lomé. Les patients oxygénés ou ventilés en réanimation du 1er septembre 2020 au 31 mai 2021 étaient inclus.

Résultats: Sur 1073 patients admis dans le centre et 134 étaient inclus dans l'étude. L'âge moyen était de 60,53 ± 13,6 ans et la sex-ratio de 1,27. Cent trois patients (76,87%) avaient au moins une comorbidité, dont l'hypertension artérielle (55,22%), le diabète (41,79%) et l'obésité (15,67%). La SPO_2 médiane était de 83% (IQ 74-88%).

L'oxygénothérapie conventionnelle était réalisée chez 132 patients (98,51%), la ventilation non invasive (VNI) chez 41 patients (30,60%) et la ventilation invasive (VI) chez 37 (27,61%).

Sous oxygène, 35,82 % des patients avaient une bonne évolution et 64,18 % étaient décédés. Sous VNI (41 patients), 9,76 % avaient une évolution favorable, 58,54 % d'échec et 31,71% de décès.

Sous VI (37 patients), tous étaient décédés (100%). Le taux de létalité était 64,18 %, lié au syndrome de détresse respiratoire aigu (60,45%), l'embolie pulmonaire (23,80%) et la défaillance multiviscérale (11,19%).

Conclusion: L'oxygénation conventionnelle, la VNI et la VI étaient les moyens d'apport d'oxygène réalisé pendant la Covid-19 en réanimation. L'évolution était marquée par une létalité élevée surtout sous VI.

Mots-clés: oxygénothérapie, covid-19, réanimation, CHR-Lomé-Commune, Togo.

ABSTRACT

Introduction: Covid-19 patients who present with severe conditions, often require oxygen support. This study aimed to describe oxygen therapy and ventilation techniques and outcomes.

Methods: We conducted a retrospective descriptive study at the Covid-19 center in Lomé. Patients who received oxygen therapy or mechanical ventilation in the intensive care unit (ICU), between September 1, 2020, and May 31, 2021, were included.

Results: Of 1073 patients admitted to the center, 134 patients were included in the study. The mean age was 60.53 ± 13.6 years and the sex-ratio was 1.27. One hundred and three patients (76,87%) had at least one comorbidity, including hypertension (55.22%), diabetes (41.79%), and obesity (15.67%). Median SpO2 was 83% (IQR 74-88%).

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Conventional oxygen therapy was applied in 132 patients (98,51% patients), non-invasive ventilation (NIV) in 41 patients (30.60%) and invasive mechanical ventilation (IMV) in 37 (21.61%).

Under COT, 35.82 % of patients recovered and 64,18 % died. Out of NIV(41) patients, 9.8% recovered, 58.54% escalated to IMV and 31.71% died. With IMV (37 patients), 100 % died. The mortality rate was 64.18%, caused by acute respiratory distress syndrome (60.45%), pulmonary embolism (23.80%), and multiple visceral failures (11.19%).

Conclusion: COT, NIV, and IMV are the procedures of oxygen support in Covid-19 patients. The mortality rate is high, especially with IMV.

Keywords: oxygen therapy, intensive care, covid-19, lomé-commune hospital, togo.

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I. INTRODUCTION

La prise en charge des patients présentant des formes graves de covid-19 nécessite souvent un apport d'oxygène, en raison soit de l'insuffisance respiratoire, soit des autres détresses vitales. L'apport d'oxygène peut être fait par l'oxygénothérapie, la ventilation non invasive (VNI) et la ventilation mécanique invasive (VI). Peu d'études ont rapporté l'expérience des unités de réanimation durant la pandémie de Covid-19 en Afrique sub-saharienne **[1-3].**

Notre étude avait pour objectif de décrire l'oxygénothérapie dans la prise en charge des formes graves de covid-19.

II. MÉTHODOLOGIE

Dans une étude descriptive rétrospective entre le 1er septembre 2020 et 31 Mai 2021, au Centre Hospitalier Régional Lomé Commune (CHR-LC), nous avons décrit l'oxygénothérapie pendant la Covid-19 dans ledit centre national de référence pour la prise en charge de la Covid-19 .Ce centre disposait d'une unité de réanimation de 22 lits avec des moniteurs multiparamétriques, des respirateurs de réanimation et de transport, des défibrillateurs, des pousse-seringues électriques, des extracteurs d'oxygène, des bouteilles d'oxygène comprimé, des aspirateurs de mucosités, des chariots d'urgence, des glycomètres et des oxymètres de pouls.

Le personnel spécialisé en soins critiques comprenait trois médecins anesthésistes réanimateurs (MAR), un médecin urgentiste et 8 techniciens supérieurs d'anesthésie et réanimation (infirmier anesthésiste).

Le diagnostic de Covid-19 reposait sur l'identification du génome du Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) par le test de la Reverse Transcription Polymerase Chain Reaction (RT-PCR) sur un prélèvement naso-pharyngé ou oro-pharyngé.

Les patients étaient classés en fonction de la gravité de la maladie selon la classification de l'Organisation Mondiale de la Santé (OMS) en quatre formes **[4]** :

- *Forme bénigne*

Elle regroupe les patients présentant une infection au SARS-CoV-2, avec des symptomatiques légers sans signe de pneumonie ni hypoxie. Ces patients étaient pris en charge en ambulatoire ou en hospitalisation normale

- *Forme modérée*

Regroupe les patients infectés par le SARS-CoV-2 qui présentent une pneumonie avec hypoxie modérée (Spo2 ≥ 90%) à l'air ambiant, sans signe de détresse respiratoire. Ces patients étaient pris en charge en hospitalisation normale ou en unité de soins intensifs.

- *Forme sévère*

Regroupe les patients infectés par le SARS-CoV-2 et présentant des signes de pneumonie sévère et une hypoxie avec SPO2 < 90% en air ambiant. Ces patients sont pris en charge en unité de soins intensifs ou en réanimation.

- *Forme critique*

Regroupe les patients infectés par le SARS-CoV-2 et présentant un syndrome de détresse respiratoire aiguë (SDRA), un état septique, un état de choc, ou une autre détresse vitale. Ils sont pris en charge en réanimation.

Dans ledit centre, les patients présentant des formes sévères et critiques étaient admis en réanimation.

En l'absence d'unité de soins intensifs et soins continus, les patients de forme modérée avec hypoxie nécessitant un débit d'oxygène supérieur à 6 litres par minute ou une surveillance continue étaient également admis en réanimation.

L'évolution était bonne lorsqu'il y avait la réduction ou la disparition des signes de détresse respiratoire, autorisant la sortie de la réanimation.

Nous avons obtenu une autorisation de la direction du CHR-LC après l'accord du comité d'éthique de l'hôpital.

La collecte des données était faite dans la confidentialité et en conformité avec les principes éthiques.

Les dossiers des patients infectés par le SASR-CoV-2 et admis en réanimation durant la période de prise en charge étaient sélectionnés. Les patients qui avaient reçu un supplément d'oxygène étaient inclus.

Nous avons relevé les caractéristiques sociodémographiques et épidémiologiques des patients, les indications, les moyens et le résultat de l'oxygénothérapie et de la ventilation.

L'analyse des données était faite à l'aide du logiciel Epi info 7.3.2.

Comorbidités

Les variables qualitatives étaient décrites en moyenne et écart-types ou en médiane avec intervalle interquartile, tandis que les variables quantitatives étaient exprimées en fréquence et pourcentage.

III. RÉSULTATS

Effectif et aspects sociodémographiques des patients

Durant 9 mois de prise en charge, 1073 patients étaient admis au CHR-Lomé-Commune dont 171 (15,9%) en réanimation. Cent trente-quatre (134) patients oxygénés ou ventilés étaient inclus dans l'étude.

Leur âge moyen était de 60,5 ± 13,6 ans avec des extrêmes de 28 et 86 ans et une sex-ratio de 1,27.

Tableau I: Répartition des patients selon les comorbidités

	Fréquence	Pourcentage
Hypertension artérielle	74	55,22
Diabète	56	41,79
Obésité*	21	15,67
Tumeur maligne	6	4,48
Asthme	5	3,73
Cardiopathie chronique	5	3,73
Infection par le VIH#	4	2,99
Hépatite virale B chronique	4	2,99
Bronchopneumopathie chronique obstructive	4	2,99
Insuffisance rénale chronique	4	2,99
Autres&	8	5,97

*Indice de masse corporelle > 30 kg/m²
Virus de l'Immunodéficience Humaine
& Drépanocytose (3 cas), thrombose veineuse profonde de moins de 6 mois (3 cas), embolie pulmonaire de moins de 6 mois (3 cas).

Signes cliniques à l'admission

Tableau II: Caractéristiques cliniques des patients

	Fréquence	Pourcentage
Signes cliniques		
Hypoxie	134	100
Tachypnée#	133	99,25
Signes de lutte	104	77,61
Epuisement respiratoire	4	02,99
Bradypnée&	1	0,75
Hypertension artérielle	29	21,64
Etat de choc	6	04,48
Hypotension artérielle*	3	02,24
Altération de conscience	15	11,19
Score de Glasgow ≤ 8	4	02,99
Score de Glasgow 9 à 12	11	08,21
Gravité clinique		
Forme critique	34	25,37
Forme sévère	75	55,97
Forme modérée	25	18,66

Fréquence respiratoire supérieure à 22 par minute
&Fréquence respiratoire inférieure à 10 par minute
*Hypotension artérielle sans singe de choc

Examens paracliniques réalisés

Quatre-vingt-neuf (66,41%) et 65 patients (48,51%) avaient réalisé la radiographie du thorax ou l'examen de tomodensitométrie (TDM) thoracique respectivement. Les lésions retrouvée étaient : le syndrome alvéolaire chez 68 patients (50,75%), le syndrome interstitiel chez 53 patients (39,55 %), l'embolie pulmonaire chez 17 patients

(12,69 %), hypertension artérielle pulmonaire chez 12 patients (08,96 %), les lésions de crazy paving et la pleurésie chez 4 patients (02,99 %) respectivement.

La gazométrie artérielle était réalisée chez 8 patients dont 7 avaient un SDRA sévère (PaO_2/F_iO_2 <100 mm Hg) et 1 SDRA modéré Traitement

(PaO_2/F_iO_2 = 100 à 200 mm Hg). La PaO_2 moyenne était de 55 ± 14 mm Hg (extrêmes : 41 et 68 mm Hg) et le rapport PaO_2/F_iO_2 moyen était de 133 ± 119 mm Hg (extrêmes : 60 et 270 mm Hg).

Tableau III: Techniques et modes d'oxygénothérapie et de ventilation

	Fréquence	Pourcentage
Oxygénothérapie conventionnelle	132	98,51
Par lunettes à Oxygène	61	45,52
Par masque à oxygène	10	07,46
Par masque à haute concentration	96	71,64
Ventilation non invasive	54	40,30
Mode CPAP	24	17,91
Mode pression positive	30	22,39
Ventilation invasive	37	27,61

Traitements adjuvants

Tableau IV: Les traitements associés

	Fréquence	Pourcentage
Antibiothérapie	134	100
Anticoagulation prophylactique	37	27,61
Anticoagulation à dose curative	97	72,39
Corticoïdes	132	98,51
Antipyrétiques	107	79,85
Sédation	30	22,39
Remplissage vasculaire	27	20,15
Transfusion sanguine	18	13,43
Hémodialyse	11	08,21

Surveillance et évolution

La surveillance était basée sur les paramètres respiratoires dans tous les cas: la fréquence respiratoire (FR), les signes de détresse respiratoire, la SPO_2, les volumes et pressions de ventilation. La gazométrie artérielle pour le suivi était faite chez 8 patients (6,0%). La PaO_2 moyenne était de 74 ± 35 mm Hg (extrêmes : 41 et 129 mm Hg) et le rapport PO2/FiO2 (mm Hg) moyen était de 116 ± 88 mm Hg (extrêmes : 50 et 282 mm Hg).

Sous l'oxygénothérapie conventionnelle (voir tableau III) : 44 (32,84%) avaient une bonne évolution, 52 (38,81%) patients avaient nécessité une ventilation mécanique (non invasive et invasive)

Sous VNI (tableau III) 41 patients (40,60%), l'évolution était bonne chez 4 patients (02,99 %), vingt-quatre patients (17,91%) avaient nécessité la ventilation invasive et 26 (19,40%) étaient décédés.

Sous ventilation invasive, tous les 37 patients (27,61%) étaient décédés.

L'évolution globale était bonne chez 48 patients (35,82%) qui étaient transférés en hospitalisation.

Quatre-vingt-six patients (64,18 %) étaient décédés en réanimation.

La durée moyenne de séjour en réanimation était de 9,9 ± 5,4 jours avec des extrêmes de 4 et 25 jours.

Etiologies des décès

Tableau V: Les causes de décès en réanimation

	Effectif	Pourcentage
SDRA sévère	56	65,12
Embolie pulmonaire	15	17,44
Défaillance multi viscérale*	14	16,28
Insuffisance rénale terminale	7	8,14
Défaillance cardiaque	5	5,81
Choc septique	5	5,81
Métastase multiple de néoplasie	2	2,33
AVCH avec engagement#	1	1,16
Insuffisance hépatique aiguë	1	1,16

*Etat de choc, insuffisance hépatique et rénale
AVCH : accident vasculaire cérébral hémorragique

IV. DISCUSSION

4.1 Limites de notre étude

Il s'est agi d'une étude monocentrique rétrospective dont les résultats pourraient ne pas correspondre à ceux des autres centres. Notre étude n'a pas évalué la mortalité en fonction des différents paramètres pour identifier les facteurs de morbidité et de mortalité.

La fréquence d'admission dans notre contexte était de 15,9% en réanimation. Elle est très hétérogène dans la littérature. Elle était de 2,3% selon Donamou J en Guniée, 16,3% selon Bennett S dans une revue de littérature, 25% selon Pavan K aux USA et 40% selon Anish R Mitra au Canada [5, 1, 6, 7].

La moyenne d'âge est élevée (60,50± 13,60 ans). Il s'agit d'une pathologie affectant plus les personnes âgées. Ceci est retrouvé dans la littérature par plusieurs auteurs [1, 5-9]

L'HTA et le diabète étaient les comorbidités les plus fréquentes chez les patients de notre série avec un âge avancé de 60 ans comme dans la littérature [1, 5-9]. La présence de comorbidités ainsi que l'âge avancé étaient des facteurs de risque de forme grave de Covid-19 et de mortalité selon les auteurs [10-13] (voir tableau I).

A leur admission en réanimation, tous les patients avaient une dyspnée avec hypoxie (SPO_2 <94%). La SPO_2 à l'air ambiant variait de 15% à 91% avec une médiane de 83% (IQ 74-88%). Cent huit patients (80,60 %) présentaient une détresse respiratoire avec des signes de lutte ou d'épuisement respiratoire (voir tableau II).

La prise en charge de la détresse respiratoire dans notre série procédait par l'oxygénothérapie conventionnelle, puis en cas d'inefficacité, la VNI était instaurée. La ventilation mécanique invasive était indiquée en dernier recours après échec d'oxygénothérapie ou de VNI, ou d'emblée en cas de détresse respiratoire sévère ou de coma grave ou d'état de choc (voir tableau II).

L'oxygénothérapie conventionnelle était réalisée avec le masque à haute concentration dans la

plupart des cas (71,64%) (Voir tableau III). C'était le moyen d'oxygénothérapie qui permettait d'administrer le plus fort débit d'oxygène au CHR-Lomé-Commune, de même que dans les autres pays à ressources faibles notamment en Afrique Sub-saharienne [1, 2, 14, 15].

L'oxygénothérapie par canule nasale à haut débit (OHD) est une autre technique d'oxygénation permettant de délivrer des débits d'oxygène plus élevés, pouvant atteindre 60 litres par minute. Son utilisation s'est développée durant la pandémie à Covid-19, avec de bons résultats en termes de baisse de la mortalité et de réduction des taux d'intubation trachéale [7, 8, 16-18]. Mais cette technique n'était pas disponible au CHR-Lomé-Commune.

Le faible taux d'utilisation de la VNI et de la VI dans notre étude (voir tableau III) était similaire aux autres pays à ressources faibles avec des taux de 4% à 26,2% pour la VNI et de 2,5% à 28,7% pour la VI [1, 2, 14, 15]. Alors que dans les pays à revenu intermédiaire et élevé, la VNI et la VI étaient plus utilisées, avec une fréquence de 18,5% à 43,1% pour la VNI et 36,3 à 81,5% pour la VI [6, 8, 19-24].

La faible fréquence de la ventilation mécanique dans notre contexte était liée à l'insuffisance du personnel qualifié en soins critiques, de respirateurs, de consommables de réanimation et de médicaments de sédation.

La surveillance dans notre étude était essentiellement clinique. La gazométrie était réalisée (05,97% des cas) chez seulement 8 patients, alors qu'elle était l'examen clé dans la prise en charge de toute détresse respiratoire, permettant de déterminer le mécanisme et la gravité des différents troubles de l'oxygénation et de l'élimination du dioxyde de carbone. Sa faible fréquence était liée à son indisponibilité au CHR-Lomé-Commune au début de la pandémie, puis à la pénurie de consommables.

L'évolution sous oxygénothérapie conventionnelle était marquée par un fort taux d'échec (38,81%) et de mortalité (26,87%).

Ceci serait lié à l'évolution de la pneumopathie vers le SDRA sévère responsable d'hypoxémie réfractaire, vers les embolies pulmonaires graves ou la défaillance multiviscérale qui nécessitaient une assistance respiratoire (voir tableau IV). Les difficultés de mise en œuvre de l'assistance respiratoire liées à l'insuffisance du personnel qualifié et de matériels expliquaient les décès sans assistance respiratoire dans certains cas.

La VNI avait connu les échecs (58,54%) ou décès (31,71%). Ces résultats étaient similaires à ceux de la littérature. Dans une étude de cohorte multicentrique européenne, Marti S [17] avait retrouvé des taux d'échec de 60,8% et de mortalité de 46,8% sous VNI.

En Arabie Saoudite, Al-Otaiby M [22] a trouvé une mortalité de 37% sous VNI. Dans un contexte à ressources faibles au cours d'une mission humanitaire de Médecins San Frontières en Irak, Richard T [25] a rapporté aussi une mortalité élevée de 61,1% sous VNI.

La mortalité sous VI était très élevée dans notre série comparée aux autres études. Yang en Chine et Arias Ramos D en Colombie ont rapporté respectivement 61,5% et 76% de mortalité sous VI [13, 21]. Cette mortalité élevée était liées aux insuffisances dans la prise en charge en réanimation au CHR-Lomé-Commune. Elle pourrait aussi être liée au retard de mise en œuvre de la VI dans notre étude et à la gravité propre de l'atteinte respiratoire et des détresses vitales associées. La VI était le moyen de dernier recours devant une détresse respiratoire dans notre contexte, alors que dans la littérature, l'oxygénation par membrane extracorporelle (ECMO) et l'application de la ventilation en décubitus ventral étaient des moyens supplémentaires utilisés pour la prise en charge des patients critiques présentant un SDRA réfractaire à la ventilation classique [8, 21-24, 26]. Mais l'ECMO n'était pas disponible dans notre unité de réanimation. La ventilation en décubitus ventral n'était pas pratiquée en raison de l'inadéquation des lits de réanimation. Tous ces facteurs combinés expliquaient la mortalité globale qui était plus élevée que celle rapportée dans la plupart des études. Cette mortalité en

réanimation était hétérogène, variant de 25% à 50% [7, 8, 19, 21, 22, 24].

Dans les conditions de ressources similaires à notre étude, Donamou J en Guinée, Ahounou E au Bénin et Ngomas JF au Gabon ont trouvé respectivement un taux de mortalité de 25% ; 27,7% et 41,7% [1, 2, 14]. Mais dans leurs études, la plupart des patients inclus avaient un faible score de gravité, ce qui pourrait expliquer la faible mortalité.

Les forts taux d'échec et de mortalité sous oxygénothérapie conventionnelle et sous ventilation mécanique suggèrent la nécessité d'améliorer la prise en charge. L'augmentation du personnel qualifié en soins critiques, l'amélioration de l'équipement de réanimation notamment pour la ventilation invasive et non invasive, l'OHD et l'ECMO, la disponibilité permanente des produits de réanimation et la mise à jour des protocoles de réanimation sont les principaux axes d'amélioration.

V. CONCLUSION

Les patients admis en réanimation au CHR-Lomé-Commune présentaient des formes sévères de la maladie dans la plupart des cas. La détresse respiratoire hypoxique, le coma et l'état de choc étaient les indications d'oxygénothérapie et de ventilation. La surveillance était basée essentiellement sur les signes cliniques dont la SPO_2. Leur prise en charge comportait l'oxygénothérapie conventionnelle, la ventilation invasive et non invasive.

L'oxygénothérapie conventionnelle était le moyen le plus utilisé avec un bon résultat dans un tiers de cas. La VNI était indiquée chez un quart des patients de réanimation avec 9,8% de succès et 58,54% d'échec. La VI avait un mauvais résultat avec une mortalité de 100 %.

La mortalité (64,18%) était liée essentiellement aux complications respiratoires et infectieuses.

Les insuffisances dans le prise en charge étaient liées à l'insuffisance du personnel qualifié en soins critiques, d'équipements, de produits et consommables de réanimation.

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Knowledge, Attitude and Practice Towards Female Condom use at International Paramedical Institute-Maya, Wakiso District

Watmon Erick

ABSTRACT

Sexually transmitted infections especially HIV/ AIDS and unwanted pregnancy among students in higher institutions and universities is now a problem yet condom offers protection against sexually transmitted infections including HIV and pregnancy. In spite of various promotion, female condom use still remains relatively low among students especially girls. This study purposed to assess to the knowledge, attitude and practice towards female condom use among female of International Paramedical Institute, Wakiso District Uganda.

A descriptive cross sectional study was implemented and cluster sampling method was adopted to obtain a required number of respondents bringing up to 100 respondents which was got from 134 sample size.

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A descriptive cross sectional study was implemented and cluster sampling method was adopted to obtain a required number of respondents bringing up to 100 respondents which was got from 134 sample size.

The results of this study shows that of 100 respondents majority had good and proper knowledge on female condom and 69(69%) of the respondents agreed that female condom can protect against HIV/AIDS. In relation to attitude towards use of female condoms, most respondents have negative attitude as 66 (66%) of the respondents agreed that using female condom reduce sexual pleasure and 84% agreed that FC make sex uncomfortable. The level of female condom use was as low as only 11 (11%) of the respondents.

This study therefore conclude that majority of females have does not have good attitude and does not use female condoms despite having good knowledge of female condom, the level of use is very minimal and irregular.

This study therefore recommends that for consistent and regular use of female condom, there is need to provide better information on female condom and make female condom available and easily accessible to students in various places including hospitals. Better information can be achieved by introduction of sex education in institutions and universities.

I. CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter describes background of the study, problem statement, general objectives, specific objectives, and research questions, significance of the study and the scope of the study.

1.2 Background of the study

Infection by HIV is one of the most serious sexual health problems. The World Health Organization reported a total of 36,700,000 people infected with HIV in the world; 2.1 million of these people became infected in 2015 (Vallejo-Medina Pablo1, 2019).

In Uganda, a study according to USAID data 2020 showed that 1500000 people were infected of which 53000 we're newly infected and there were 21000 AIDs related deaths in 2019 (USAID, 2020).

Similarly, another study in Uganda shows that in 2016-2017, the prevalence of HIV among adults aged 15 to 64 in Uganda was 6.2%: 7.6% among females and 4.7% among males. This corresponded to approximately 1.2 million people aged 15 to 64 living with HIV in Uganda. HIV prevalence was higher among women living in urban areas (9.8%) than those in rural areas (6.7%) (assessment, 2017).

Male condom and female condoms is the only dual control device: they reduce the transmission of HIV and other STIs and they also prevent unplanned pregnancies. Therefore, the use of condoms must be promoted in order to prevent STIs and unplanned pregnancies (Vallejo-Medina Pablo1*, 2019). In 1980s scientists came up with a female condom innovatively designed to make a woman to have a full control of HIV and STIs infections as a response to male condom.

The female condom (also known as femidom) is a tool of empowering woman for protecting against HIV and STIs as well as unwanted pregnancy (Kayombo, 2016).

A study conducted among student in university of Douala shows that young women accounts for 64% of young people living with HIV globally and in Cameroon, women are having HIV more than men with prevalence of 5.6% and 2.9% respectively (Michel Ekono1, 2019).

The female condom (FC) is a polyurethane sheath with a flexible ring at both ends, which fits into the vagina before sexual intercourse, providing the woman with autonomy for protection, both against unwanted pregnancies and sexually transmitted infections (STIs), including HIV-AIDS (Michel Ekono1, 2019). Consistent and appropriate use of condom is the most effective way of preventing HIV/AIDS transmission and unwanted pregnancies.

This mean that females are having HIV more than males in Uganda and since female condom is very effective in prevention of HIV and there is no available data on this in Uganda showing that the knowledge attitude and practice of female condom, this study will address the knowledge attitude and practice of female condoms.

1.3 Statement of the problem

Uganda is a landlocked country with a 2014 reported population of 34.8 million people (Herreros-Villanueva, 2019). The first case of HIV (AIDS–Slim disease) in Uganda was reported in 1982 in Kansensero, a fishing village located in the Western region. Currently, HIV prevalence is highest in the Central region (10.4%) due to its urbanization and location of the capital city Kampala – home to 1.5 million people according to 2014 statistics (Herreros-Villanueva, 2019). HIV prevalence is almost four times higher among females than males aged 15 to 19 and 20 to 24 (assessment, 2017).

Still according to recent UNAIDS data, approximately 570 young women aged 15 to 24 get infected with HIV every week in Uganda. In all of Africa, Uganda is only second to South Africa where 2,363 individuals get infected every week (Herreros-Villanueva, 2019).

Government of Uganda has put in place the use of female condoms in the prevention of HIV but still the cases is so high among the females compared to males in Uganda.

Data concerning female condom knowledge attitude and practice is very minimal in Uganda, this call for the need to conduct and investigate more on the knowledge attitude and practice toward female condoms.

This study will help find out the knowledge attitude and practice of condom use among females such that the result can be use address problem associated with females' condom utilization as the method of preventing HIV.

1.4 General objective

To determine the knowledge, attitude and practice toward female condom among students of international paramedical institute

1.4.1 Specific objectives

To assess the knowledge of female condom among students of international paramedical institute.

To assess the attitude towards female condom among students of international paramedical institute.

To determine the practice of female condom among students of international paramedical institute.

1.4.2 Research questions

1. Do female students of International Paramedical Institute know about female condom?
2. What is the attitude of female students of International Paramedical Institute towards female condom?
3. Do female students of International Paramedical Institute use female condom?

1.5 Significance of the study

This study will help reduce the transmissions of HIV and other sexually transmitted infections, in policies making, avoiding unwanted pregnancies and make students to educate other student on the knowledge of females condom use. This will in turn reduce on the level HIV among students, unwanted pregnancies, and equipped them with knowledge about females condom use.

1.6 Scope of the study

This study was carried out at international paramedical institute, one of the medical institutes in Wakiso district. It was focused on the knowledge, attitude and practice of female students towards female condoms in international paramedical institute. It involved all female students that are willing to participate and students who were still at home and for those who are present but are not willing participate in the study were excluded.
The study was conducted for a period of seven months.

II. CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will give relevant review of what other researchers found out on knowledge attitude and practice of female condom among students of international paramedical institute.

2.2 Knowledge of female condom among students

Knowledge and awareness of condoms is necessary in the prevention of HIV/AIDS, STIS and unplanned pregnancy. Studies done have found that the relationship between condom awareness and use tends to be unequal whereby knowledge will not always result into use (Vallejo-Medina Pablo1 et al, 2019).

A prospective and cross-sectional study was done on students of 320 sample size in university of Douala in assessing knowledge of female condoms shows that 74.4% were poorly knowledgeable, 17.5% had average knowledge, and 0.3% had good knowledge of female students. The physical description of the condom was known to 54 (29.3%) female students. In terms of physical knowledge, 54 (29.3%) students were able to describe the female condom. The channels through which they were informed were mainly media (159 cases = 49.7%), HIV prevention campaigns (148 cases = 46.3%) and eleven students (3.4%) were informed by the medical staff (Michel Ekono et al, 2019).

As for female condom functions, 244 students (77.2%) were aware of its protective role against STIs, while 171 (54.1%) mentioned its role in preventing unwanted pregnancies . According to this study, the students therefore had a fairly good knowledge of the functions and the role of the female condom, but they were unaware of its physical appearance and use. Their overall level of knowledge about the female condom was poor at 74.4%, 7% unsatisfactory, 17.5% average, and 0.3% satisfactory (Michel Ekono et al, 2019).

A study was published in 2015 hypothesized that individual with high knowledge of HIV would have higher condom use intentions that individuals with low HIV knowledge where by the majority of participants scores high on HIV knowledge (Kimberly Boydet al, 2015).

According to study done by Regina Mtayangulwa and Edward J. Kayombo published on 29th September 2015 done on 384 undergraduate students aged 21-25years in university of Dar Salaam assessing knowledge of female condoms showed 96.6% had heard about female condom, but only 18.75% respondents were classified to have high and 58.8% had low knowledge of female condom (Kayombo et al, 2016). The major source

of information on awareness and knowledge of female condom in this study were from mass media (radio, magazine and newspaper and television) (73%). Health workers who were expected to take a leading role on education and dissemination of female condom were among the least of sources of information (7.46) (Kayombo et al, 2016).

A study which was done 2015 on knowledge, perception and attitude of students towards female condoms shows that 59 percent of the respondents noted that they know how the female condom looks like while on the other hand 41 percent of the respondents noted that they did not know how the female condom looks like (Mathew et al, 2015).

Pertaining knowledge on how to use female condom, a study was published in 2015 about knowledge, attitudes and utilization of the female condom among high school female student in Kumba, Cameroon found out that majority of the respondents (64.1%) does not know how to fit in female condom correctly (Bain, 2015).

2.3 Attitude towards use of female condom

Attitude according to this study refers to good or bad beliefs associated with the use of condoms. Good attitudes are the beliefs that support the use of condoms and bad attitude on the other hand refers to the beliefs that discourage its use.

According to a study which was conducted assessing attitude toward female condoms by Dr. Ekono Michel on students of 320 sample size in university of Douala shows uncomfortable female condom in 37.4%, embarrassing in 29.4%, difficult to use in 36.1% and scary in 28.1% of cases. As for their use, 125, or 39.6% of the workforce was willing to use it. Those who were willing to offer it to other people numbered 121 (38.3%). The rate of acceptability of the female condom was 48.1%. However, 83.3% of female students (including some female users) had an overall negative perception of the female condom, compared to 16.2% of undetermined attitudes (Michel Ekono et al, 2019).

A study in Dar Salaam by Regina Mtayangulwa and Edward J. Kayombo (2016) suggest that there is fair attitude towards female condom considering the fact that it is not well marketed by mass media as male condoms and somehow being marginalized. As shown in this study, 46% had positive attitude towards female condoms, and thought female condom could increase a woman's ability to safe sex. The analysis of the findings showed majority of the respondents who had high knowledge of female condom had a positive attitude towards female condom. On the other hand, majority of those who had low knowledge of female condom had negative attitude towards female condom (Kayombo et al, 2016).

According to a study which was done to assess the attitude of female condoms among high school students in Kumba, Cameroon (2015) shows that majority, 64.1% believed that femalecondoms decrease sexual satisfaction, and a slight majority, 52.0% believed that due to religious beliefs they would feel guilty using female condoms.

Therefore, majority of the female students according to the study exhibited negative attitudes towards the female condom (Bain et al, 2015).

2.4 Condom use

Proper use of condom prevents Sexually Transmitted Infections (STIs) and unwanted pregnancies. Condom utilization will be discussed by looking at a number of aspects that other researchers found out about uses of female's condom among female.

The female condom is useful in empowering women to protect themselves from adverse consequences of sexual intercourse but there is a dearth of information about willingness to use this device by young women in Nigeria (PO Nwankwo et al, 2018).

A study done in University of Douala among students in 2019 by Dr. Ekono Michel on knowledge, attitudes and practices of female's condom among students in three faculties of the University of Douala revealed that the female condom use rate was 8.4% with a user satisfaction

rate of 7.4% and its use infrequent and unsatisfactory (Michel Ekono et al, 2019).

Similarly, a study done in University of Dar-Es-Salaam among students assessing knowledge, attitude and practices of female's condom among females undergraduate by Regina Mtayangul-waand Edmund J. Kayombo showed that out of 371 students who had heard of female condom, 4.31% admitted to have used at least ones, and of those who have ever used female condom, 26.7% preferred female condom as a means of HIV and STIs prevention (Kayombo et al, 2016).

A similar study was done in Kumba, Cameroon on the utilization of female condoms among high school students in 2015 revealed that only few sexually active female students, 3.6% reported having used female condoms during their first sexual encounters and only 5.6% reported having used them during their most recent sexual encounters. Still this study shows that consistent use of female condoms among the sexually active female students was low, 1.2% and the percentage of the sexually experienced female students who had ever used female condoms during sexual intercourse was also very low, 8.0%. There were no significant associations between respondents' knowledge on the female condom and their use of the female condom (Bain et al, 2015).

In an impoverished urban area, a quantitative and evaluative household survey was conducted to assess the knowledge, attitude and use of condom among women revealed that 1(0.33%) had practiced sexual intercourse with the female condom satisfactorily (Zaccara et al, 2015).

In general, all the study above shows clearly that utilization of female's condoms by females is very poor. This study will help find out some of the reasons why utilization of female's condom is very minima

III. CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter describes study design, study population, sample size determination, sampling technique, data collection method, data collection tool(s), data collection procedure, quality control, data analysis and presentation, ethical consideration, study limitations and their solution and dissemination of results.

3.2 Study design

A descriptive cross-sectional study that was carried out among females of International Paramedical Institute Maya assessing the knowledge, attitude and practices of female's condoms where questionnaires and focused group discussion were used. This study design was used because very many researchers used it in this similar topic and worked successfully.

3.3 Study population

The study population consisted of all female students from International Paramedical Institute Maya of at least 17 years of age who gave their written consent and are sexually active. We excluded those who were not sexually active.

3.4 Eligibility criteria

3.4.1 Inclusion

The study involved and included the following;

1. All females' students who were present at the time for collecting data in International Paramedical Institute Maya.
2. Female's students who consented to participate in the study.

3.4.2 Exclusion

This study excluded the following;

1. Female's students who were not sexually active.
2. Female students were less than 17 years.

3.5 Sample size determination

By taking the study population size (N) of 134 female's students since most of the student are at home because of corona virus lockdown.

Considering the total population (N) which is estimated to be the current number of female's students and the marginal error (e), the sample size (n) an be calculated as follow according to Mugenda formula (1999)

n=N/[1+N(e^2)]
Where;
n = sample size
N = total population=134 e= marginal error=0.05
n=134/[1+134(0.05^2)] n=134/1.335
n=100

Therefore, the number of participants was 100 females' students in this study.

3.6 Sampling technique

A cluster sampling method was used to get minimum sample size of the study. The students were divided into three clusters; cluster one comprising students doing diploma in clinical medicine and students doing medical record, cluster two comprising students doing dentistry and students doing pharmacy, cluster three comprising of students doing nursing and students doing midwifery. The sample of the study population was selected systematically from each cluster; where by the list of students from class was obtained from the class representatives.

Every 5th student from each cluster was chosen for study until the intended number was reached. This method was implemented to reduce bias selecting the respond.

A purposive sampling was also used to select girls that participated in three focused group discussions making up to 8 girls each that met the criteria of being above 17 years and was sexually active.

3.7 Data collection methods

Questionnaire and focused group discussion were used in this study.

3.8 Data collection procedures

Data was collected using well-structured questionnaire both close and open ended in English only. Focused group discussion was used by following guided questions.

3.9 Quality control

The researcher ascertained quality control of the questionnaire through pre-testing by conducting a pilot study. A pilot study was done in the institute among selected female's students doing clinical medicine. A sample of 8 girls was chosen to test the questionnaire and thereafter modified and completed. Still the quality of the research was assured by having enough time of conducting the study that is a period of 7 months. Besides above measure, the study only included students who met the inclusion above.

3.10 Data presentation and analysis

Data was coded to translate the responses of the questions into various categories. The coding reduced data into manageable summaries. The qualitative data from the focus group discussions was analyzed according to themes and patterns of responses that develop across the various respondents on each question. Quantitative data was coded and broken down using the SPSS statistical software version 21, Frequency distributions; percentages, tables and pie charts were used to present data in form of descriptive statistics.

3.11 Ethical consideration

The researcher obtained a letter from International paramedical institute Maya before undertaking the actual data collection. A written informed consent was sought from all the respondents and they freely accepted take part or not to take part in the study without any penalty.

The respondents were given freedom to participate and contribute voluntarily in the study. A comprehensive description of the purpose of study was given to those involved.

Respondents were guaranteed of confidentiality in handling of any information that was provided.

All the information obtained from the respondents was used for the sole purpose of this study. No gifts or money was given or promised to respondents for having taken part in the study.

3.12 Study limitations

Unreliable information and not willing to open up on issues dealing with private life and professional ethics. However, this was overcome by continuous

reassurance about the confidentiality of information, proper phrasing of questions and informing the respondents in advance about the rationales and projected benefits of the study.

Limited time to carryout research. However, this was overcome by closely following the guide on the work plan.

Limited funds to facilitate the research which was overcome by making a budget and borrowing from friends before commencing data collection.

3.13 Dissemination of results

Information from this study was analyzed and compiled into a research report and submitted to administration International Paramedical Institute (IPI), UAHEB, and there searcher remained with a copy.

IV. CHAPTER FOUR: RESULTS

4.1 Introduction

In this section data of the 100 respondents that were interviewed will be statistically presented inform of tables and figures supported by narrative.

4.2 Demographic data

Table 1: Shows demographic data of respondents

Variables		Frequency	Percentage (%)
Age			
15-19	33		33
20-24	43		43
25-29	17		17
30 and above	7		7
Religion			
Catholic	21		21
Muslim	11		11
Protestant	13		13
SDA	8		8
Others	47		47
Course			
DCM	19		19
Medical records	11		11
Medical laboratory	16		16
Pharmacy	14		14
Nursing	32		32
Midwifery	08		08
Year of study			
First year	46		46
Second Year	34		34
Third Year	20		20
Marital Status			
Single	87		13
Married	87		13

The majority of the respondents 43 (43%) were between 20-24 years and the minority of the respondents were 30 years and above, majority of the respondent 47 (47%) did not fall under the

listed religion while minority of the respondents 8 (8%) were SDA, most of the respondents 32 (32%) were doing Nursing and the least number 8 (8%) were doing Midwifery, majority of the respondents 46 (46%) were in first year and minority of them 20(20%) were in third year, 87 (87%) were single and 13(13%) were married.

4.3 Knowledge of female condoms

4.3.1 Respondents response on ever hearing about FC

71 (71%) of these respondents reported to ever heard about female condom and 29(29%) had never heard about female condom as shown in figure 1 above.

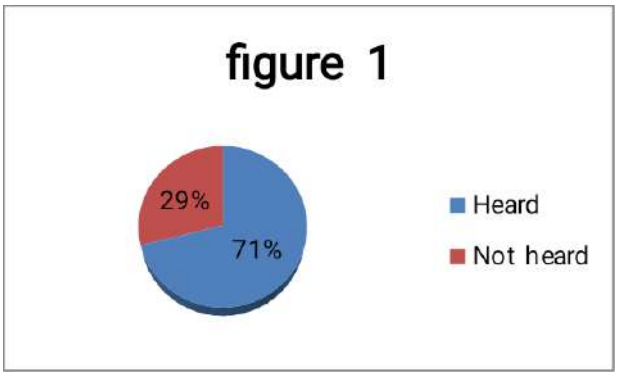

Figure 1: Show respondents who had heard about FC

4.3.2 Respondents' source of information about FC

Out of the 71 respondents who had ever heard about FC, 23 (32.4%) heard from internet, 12 (16.9%) from hospital, 15 (21.1%) from friends, 10 (14.1%) from television, 4 (5.6%) from partners and 7 (9.9%) from other sources.

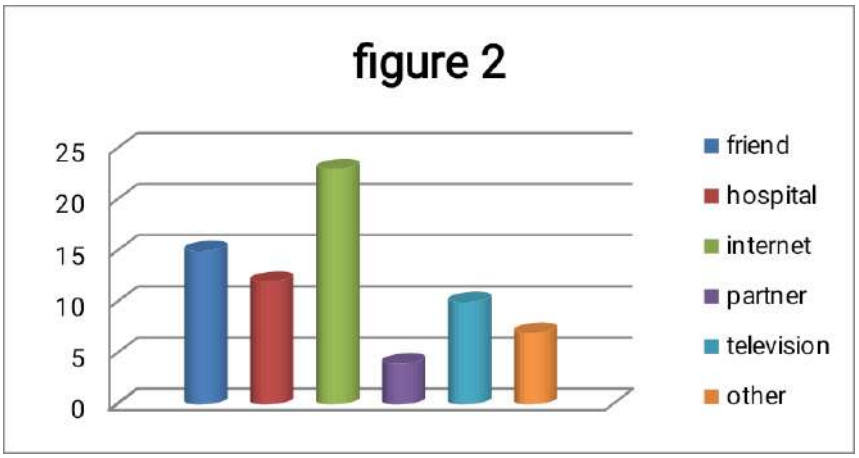

Figure 2: Shows respondents sources of information about FC

4.3.3 Respondents who saw female condom

In the above figure 3, 57(57%) had ever seen FC of which 39(%) saw it physically and 18(18%) saw the picture while 52(52%) had never seen female condom.

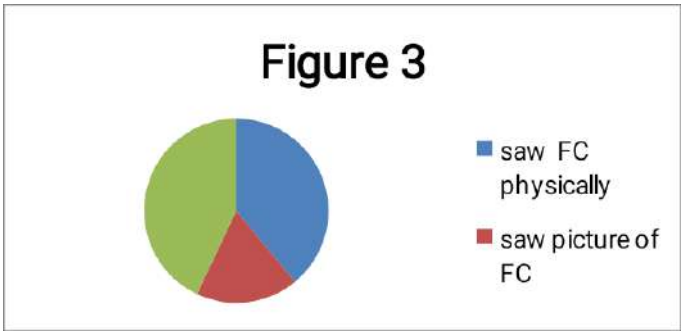

Figure 3: Shows respondents results about seeing female condom

4.3.4 Knowledge on how to use female condom

As noted in the above table2, the study found out that most of the students (81%) does not know how to use female condom mean while few of the students knows how to use female condom.

Respondents response on whether female condoms protect against HIV.

Table 2: Knowledge on how to use female condom

	Number of respondents	Percentage of respondents
Knows how to use FC	19	19%
Does not know how to use FC	81	81%

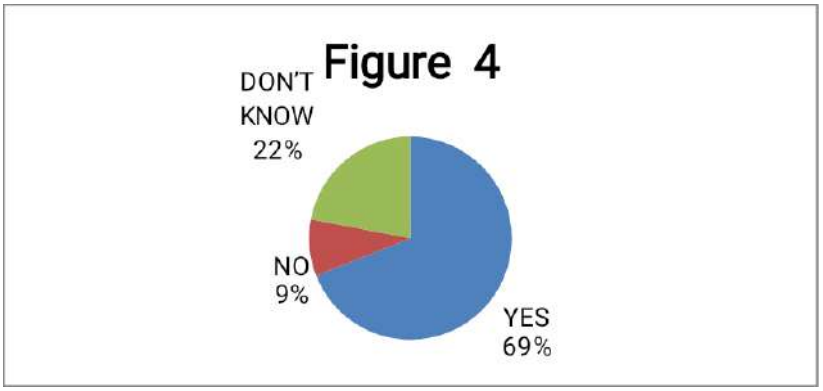

Figure 4: Shows response of respondents on whether female condoms protect against HIV

In the study carried out, 69 (69%) agreed that female condom can protects against HIV, 22 (22%) didn't know whether it can protect and 9 (9%) reported that FC don't protect against HIV.

4.3.5 Knowledge on whether female condom prevents unwanted pregnancy

On addition to protection against HIV, assessment on its protection of unwanted pregnancy show that 76 (76%) agreed that it do prevent unwanted pregnancy while 24(24%) disagreed that it prevent unwanted pregnancy.

4.4 Attitude of respondents towards F C

The results of respondents' attitude towards females' condom are displayed in table 4.3 below showing various degree of agreement and disagreement with the statement that measure attitude.

Table 3: Results of respondents' attitude towards females' condom

Questions	Strongly agree		Agree		Disagree		Strongly disagree	
	NO.	%	NO.	%	NO.	%	NO.	%
Using female condom mean I don't trust my partner	15	15%	18	18%	40	40%	27	27%
Do you think female condom make sex uncomfortable?	41	41%	18	18%	27	27%	13	13%
Do you think female condom don't prevent HIV/AIDS so there is no point in using them	14	14%	11	11%	13	13%	62	62%
Do you think sex with female condom feels good as without condom	17	17%	10	10%	28	28%	45	45%
Do you think because of female condom people are not faithful to their partner?	15	15%	21	21%	25	25%	39	39%
I would refuse to have sex if my partner refused to use female condom	39	39%	21	21%	18	18%	22	22%
Do you think if someone find me with a female condom think I have loose morals	29	29%	26	26%	25	25%	20	20%
Do you think female condom reduce pleasure during sex	41	41%	16	16%	18	18%	25	25%
Would you accept to use female condom with your sexual partner	12	12%	8	8%	32	32%	11	11%

4.4.1 Respondents attitude about FC reducing sexual pleasure

Out of 100 respondents, 57(57%) agreed that using female condom can reduce sexual pleasure meanwhile 43(43%) disagreed that using female condom reduces sexual pleasure as shown in figure 4.

4.4.2 Respondents attitude toward FC in making sex uncomfortable

In the below figure 5, it shows that 67% of respondents agreed that female condom reduce sexual pleasure mean while 33% of respondents disagree with the statement.

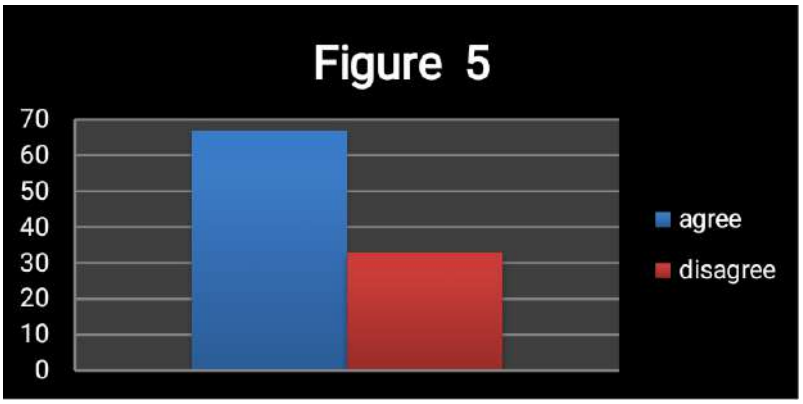

Figure 5: Shows respondents attitude about FC reducing sexual pleasure

Table 4: Shows respondents attitude toward FC in making sex uncomfortable

Belief	frequency	Percentage (%)
Agree	8 8	4 4
Disagree	26	26

Results on table 4 show that majority of the respondents 84(84%) agreed that using female condom during sex may make sexual intercourse uncomfortable meanwhile 26(26%) disagreed with the statement.

4.5 Practice

4.5.1 Respondents who have ever used female condom

The results in table 4 above shows that the biggest number of the respondents 28(34%) reported that the reason for always using condom is to prevent HIV, then 17(21.0%) of the respondents say it's to prevent pregnancy and the least number of respondents 4(4.9%) reported that its lack of trust that make people always use condoms.

Table 5: Respondents response on using female condom

Parameters	Number of respondents	Percentage of respondents
Use female condom	11	11%
Never use female condom	89	89%

V. CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter shows discussion of the findings of knowledge, attitude and practice towards female condom use among female students of International Paramedical Institute. It also presents conclusions established on the research results as well as recommendations and provides area of additional research.

5.2 Discussion

5.2.1 Knowledge of female condom

Female condom (FC) is a polyurethane sheath with a flexible ring at both ends, which fits into the vagina before sexual intercourse, providing the woman with self-sufficiency for protection, both against unwanted pregnancies and sexually transmitted infections (STIs), including HIV-AIDS (Michel Ekono1, 2019).

According to this study, majority (71%) of the respondents had ever heard about female condom. Pertaining knowledge on how to use a female condom, the study found out that most of the students (81%) did not know how to use female condom mean while a few of the students (19%) know how to use female condom.

A study which was conducted in University of Dar-Es-Salaam and published in 2015 revealed that 96.6% of the respondents reported to have heard of female condom (Kayombo et al, 2016).

Again the findings of this study show that 57(57%) had ever seen FC of which 39(%) saw it physically and 18(18%) saw it in pictures, this is almost in correlation with a study done in 2015 that reported that 59% of the respondents know how a female condom looked like.(Mathew et al, 2015).

On the source of information about FC, the internet and friends were selected by many respondents (32.4% and 21.1% respectively) out of many sources outlined. This finding concurred with a study published in 2019 that shows media 54 (29.3%) being the main source of information about FC (Michel Ekono et al, 2019).

The finding of this study also showed that majority of the respondents (69%) knows that FC protect against HIV which is consistent with a study done in 2019 that reported 77.2% were aware of FC protective role against Sexually Transmitted Infections (STIs) (Michel Ekono et al, 2019).

On addition to its HIV protection, assessment on its protection of unwanted pregnancy show that 76(76%) agreed that it do prevent unwanted pregnancy while 24(24%) disagreed that it

prevent unwanted pregnancy. This is correlating with a study published in 2019 in university of Douala whereby the biggest number of respondents (53%) agreed that FC protect against unwanted pregnancy (Michel Ekono et al, 2019).

5.2.2 Attitude toward the use of female condom

This study sort to stumble on the attitude of respondent towards female's condom. From the study 59(59%) of the respondents agreed that female condom make sex uncomfortable and 73(73%) of the respondents disagreed with the statement that "sex with female condom feels good as without condom". This shows that the respondents had negative attitude towards female condoms.

A certain study was done in Dar Salaam by Regina Mtayangulwa and Edward J. reveals that majority of the had negative attitude with only 46% having positive attitude towards females condoms (Kayombo et al, 2016). The negative attitude towards female condoms could be due to the fact that the knowledge of female condom is not to the maximum as there is still some doubt about it.

Still in this study conducted, it was agreed by 33(33%) respondents that using female condom mean I don't trust my partner meanwhile 67(67%) of the respondents disagreed with the statement.

on addition to the above results of this study, majority 57(57%) of the respondents agreed that female condom reduce sexual pleasure and 43% of the respondents disagreed with the statement.

This finding is consistence with a study published in 2015 conducted in Kumba, Cameroon which revealed that 64.1% of their respondents believe that female condom decreases sexual satisfaction (Bain et al, 2015).

In the acceptability of female condom to be used with sexual partner, only 20% of the respondents agreed that they can use, 43% of the respondents disagreed to use female condom their partner and 37% did not answer the question. This finding is contradicting with a certain study done in Bulawayo, Zimbabwe which shows that majority of the respondents (38%) noted that they will agree to use female condom with their partner while only 22% disagreed with the statement of accepting to use FC (Mathew et al, 2015).

Similarly, a study conducted in University of Douala published in 2019 shows that 48% of the respondent accepted the ideas of using female condom (Michel Ekono et al, 2019).

From a focused group discussion, majority express negative attitude towards female condom use as many said that pleasure in sex is felt when a partner does it skin to skin contact and releasing directly to the woman's body and the also said that sex with condom on makes the partner to only stay on for few minutes and does not reach the climax.

5.2.3 Practices of female condom

Pertaining female condom use, the study revealed that only 11 (11%) of the respondents had used them meanwhile 89(89%) of the respondents had not used FC. This is due to the fact that student had moderate knowledge about female condom. The findings in this aspect is in correlation with a study done in University of Douala that shows that the female condom use rate was 8.4% with satisfaction rate of 7.4% (Michel Ekono et al, 2019). Similarly another study from university of Dar Es Salaam revealed that 4.31% admitted to have use the condom once (Kayombo et al, 2016).

The study revealed that majority (34%) of the respondents reported that the reason why condom is always used is to prevent against HIV followed by 21% of the respondents reporting its use in preventing pregnancy. This finding is in correlation with a study from university of Dar Es Salaam revealed 26.7% preferring female condom as a mean of HIV and STIs prevention (Kayombo et al, 2016).

The small utilization of female condom is due to the fact that female condom is not easily accessible in the school premises as many students have seen it and also there is strict rule to student of on moving out of school since students are not allowed to move out without permission. This can limits a student to engage in sexual intercourse and getting female condom.

The study has shown that having knowledge on female condom does not always results in to its use as most of the student's reports having good knowledge on female condom yet its utilization is very minimal. This finding is consistent with a study done in Cameroon that reported that there was no statistically significant association between respondent's knowledge on female condom and their use of female condom, at the level of 0.05.

VI. CONCLUSION

The finding reveals that most of the female student at International Paramedical Institute has a good and correct knowledge about female condom this means that students at this school are being involved in activities that provides information on reproductive health. Conversely, there are some misunderstanding and false believe about female condom reported during focused group discussion that needs to be clarified.

Attitude towards female condom use is negative as most of the respondents agreed that female condom makes sexual intercourse uncomfortable and reduces sexual pleasure in spite of their agreement about female condom protecting against sexually transmitted infections (e.g. HIV) and unwanted pregnancy.

The finding also showed that most of the respondents think that if someone is found with a female condom, they think you have loose morals.

Pertaining female condom use, its level of use is remains low as majority of the respondent reported not having used female condom at all.

The study also concludes that having knowledge about FC does not always result in the its use.

Strategies targeting behaviors and attitude change should be promoted to find ways of encouraging female condom use especially among people at risk of getting STDS (e.g. HIV) and unwanted pregnancy.

VII. RECOMMENDATION

To ensure that the misconceptions that discourage use of female condoms are alleviated, interventions that promote the use of female condoms should be targeted and other dynamics related to non-use.

HIV prevention programs for the youth should aim at directing the young adolescent girls before their first sexual encounter to increase their risk perception and empower them to use protection during their first sexual intercourse with a partner of unknown HIV status.

There should be formation of programs that impart and encourage the parents to familiarize with and discuss with their adolescents about appropriate information concerning reproductive health and sexual matters since the study revealed that information about female condom is from internet not parents.

To realize the consistent use and uptake of condom use, there is need for reinforcement of positive behavior among the adolescent girls and young women. Introduction of sex education amongst out of school girls should be emphasized.

There is need address attitudes and practices towards women by educating men about responsible sexual behaviors through community based involvements if consequences related to risky sexual behaviors are to be dealt with.

There is need for sensitization and awareness to be done in regards to female condoms as from the findings of this research most girls reported having not used the female male condom as well as reporting limited knowledge about it.

Abbreviation

FC	Female Condom
STI	Sexually Transmitted Infection
AIDS	Acquire Immunodeficiency Syndrome
WHO	World Health Organization
IPI	International Paramedical Institute
UAHEB	Uganda Allied Health Examination
Board HIV	Human Immunodeficiency Virus
DCM	Diploma in Clinical Medicine and Community Health

SDA Seven Day Adventist

Definition of operational terms

Attitude: This is the way you feel about something or a settled way of feeling about something.

Female condom: This is a polyurethane sheath with a flexible ring at both ends, which fits into the vagina before sexual intercourse, providing the woman with autonomy for protection, both against unwanted pregnancies and sexually transmitted infections.

Knowledge: This is the fact of knowing about something or having general understanding or familiarity with someone or something.

Practice: The act of applying or using ideas, believe or method.

STIs: These are infections that are commonly spread by sex, especially vaginal intercourse, anal sex and oral sex.

Pregnancy: This is the time through which one or more offspring develop inside a woman.

Acquired Immunodeficiency Syndrome (AIDS): Is a condition of reduced immunity as a result of infection with the Human Immunodeficiency virus.

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Appendices

Appendix 1: Consent form

I am WATMON ERICK, a student at International Paramedical Institute pursuing a three year course of diploma in clinical medicine and community health. I am carrying out a research study on knowledge attitude and practices of female condom and you have been chosen as a potential respondent for this study. Therefore, I kindly request you to participate in the study by answering the questions provided below as this study will help us improve on our ability to protect ourselves from HIV and other STIs

Purpose of the study

The purpose of this study is to gather feedback from you about knowledge, attitudes and the use of female condoms. Your feedback will assist in identifying gaps where they exist which would be useful for any researcher who are aiming to develop or strengthen programs that are aimed at increasing awareness towards female condoms.

Confidentiality

All personal information gathered about you during this study will be kept strictly confidential and only research staff will know that you are in the study. Information learned from this study will be used in reports, presentations, and publications but you will not be personally identified.

Voluntary participation

Your participation in this research is voluntary, and you will not be penalized if you refuse to participate or decide to stop. You may withdraw from this study at any time.

Contact

If you have any concerns, questions or problems you feel may be associated with this research, contact WATMON ERICK at 0783214999, watmonerick7@gmail.com or contact adminis- tration of International Paramedical Institute if you have questions about your rights as a research participant.

If you agree to participate, you will be given a signed copy of this document and the participant information sheet which is a written summary of the research. The research study, including the above information, has been described to me orally. I understand what my involvement in the study means and I voluntarily agree to participate.

Name..... Sign.....

Appendix 2 Questionnaire

Section 1: Biographic information

1. How old are you?.....
2. What is your religion? Tick appropriate answer
   (a) Catholic (b) Muslim (c) Protestant (d) SDA (e) Others
3. Which course are you doing?
   (a) Clinical Medicine (b) Medical laboratory (c) Pharmacy Nursing
   (d) Midwifery..... (e) Medical records.....
4. Which year of study are you?
   (a) Second year (b) Third year
5. Marital status
   (a) Single (b) Married

Section 2: Knowledge of Female Condom

1. Which type of condom do you know?

Section 2: Knowledge of Female Condom

1. Which type of condom do you know?
   (a) Female condom (b) Male condom (c) Both (d) None
2. Have you heard of a female condom?
   (a) Yes (b) No
3. If yes (to Question 01), from where?
   (s) 1 = Friend (b) 2 = Hospital (c) 3 = Internet (d) 4 = Partner
   (e) 5=Television (f) 6=Others
4. Have you seen a female condom?
   (s) 1 = Yes, seen the condom (b) 2 = Yes, seen a picture of it (c) 3 = No
5. Can female's condom protect against HIV?
   (a) Yes. (b) No. (c) Don't know
6. Can female's condom protect against HIV?
7. Can female's condom prevent unwanted pregnancy?
   (a) Yes. (b) No. (c) Don't know
8. Can you describe the physical appearance of female's condom?
   (a) Yes. (b) No. (c) Don't know
9. Does condom have expiry date?
   (a) Yes. (b) No. (c) Don't know

Section 3: Attitude

Questions	Strongly agree	Agree	Disagree	Strongly disagree
Using condom mean I don't trust my partner				
Do you think condom make sex uncomfortable?				
Do you think condom don't prevent HIV/AIDS so there is no point in using them				
Do you think sex with condom feels good as without condom				
Do you think because of condom people are not faithful to their partner?				
I would refuse to have sex if my partner refused to use condom				
Do you think if someone find me with a condom think I have loose morals				
Do you think condom reduce pleasure during sex				

Section4: Practice

1. Have you ever had sex?
   (a) Yes (b) No
2. How old where you when you had your first sex ?
3. Have you ever used condom?
   (a) Yes (b) No
4. If yes, which type of condom have you ever used?
   (a) Male (b) Female (c) Both
5. Which is the common type that you have used before?
   (a) Female (b) Male
6. Did you use condom when you had sex for the first time?
   (a) Yes (b) No (c) Dont know

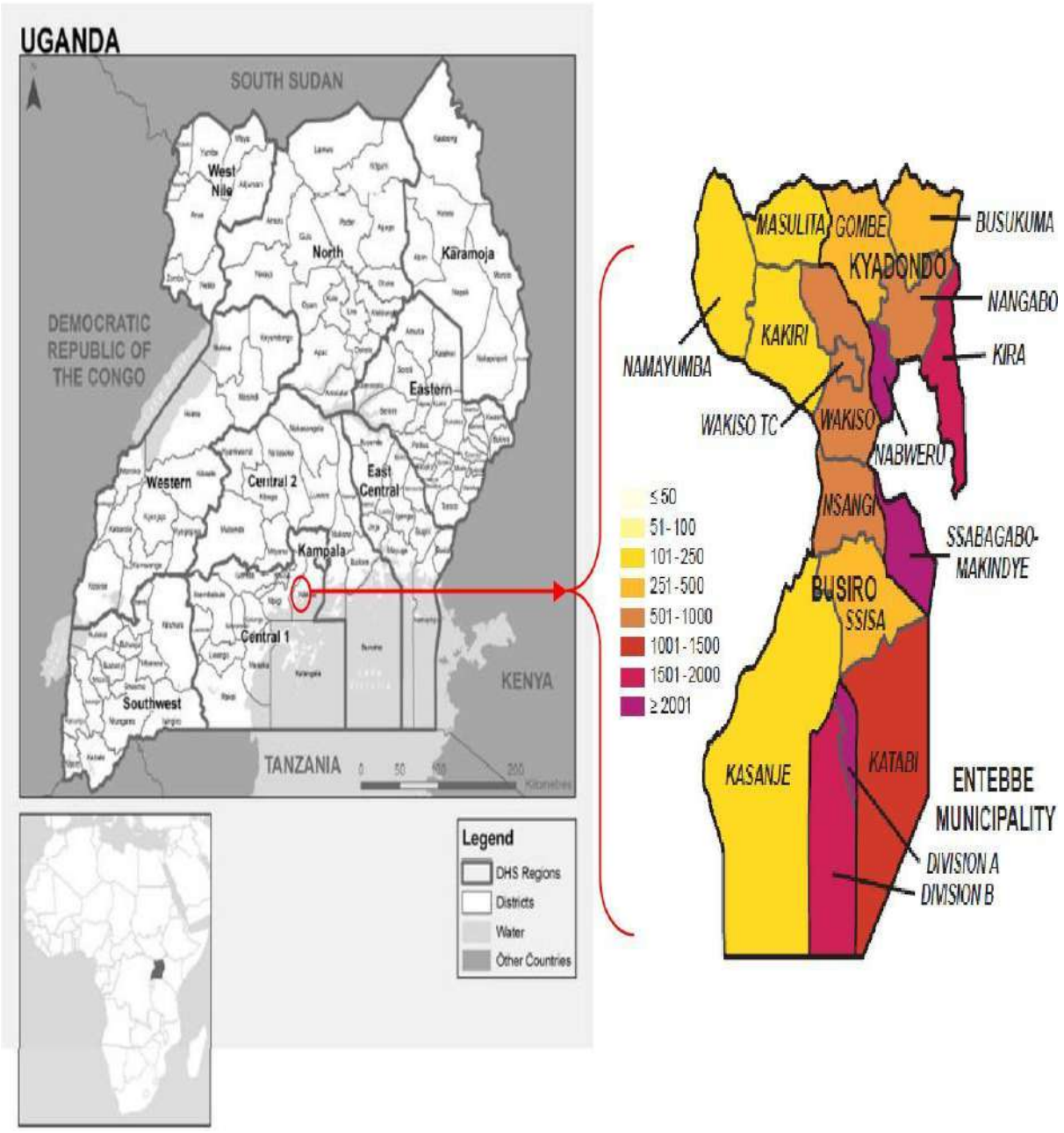
7. Do you have your current sexual partner?
   (a) Yes (b) No
8. How often have you use condom with your sexual partner?
   (a) Sometimes (b) Always (c) never
9. If yes what are the reason for always using condom?
   (a) for family planning (b) to prevent pregnancy (c) I don't trust my partner
   (d) Partner insisted (e) To prevent HIV (f) Other
10. If no, what was the reason for not using a condom?
   (a) Reduce pleasure during sex (b) I don't like it (c) To get pregnant
   (d) Caught in the heat of the moment (e) Partner doesn't like using condom (f) Other
11. Who decide when to use condom
   (a) Self (b) Partner

Section 5: Focused group discussion

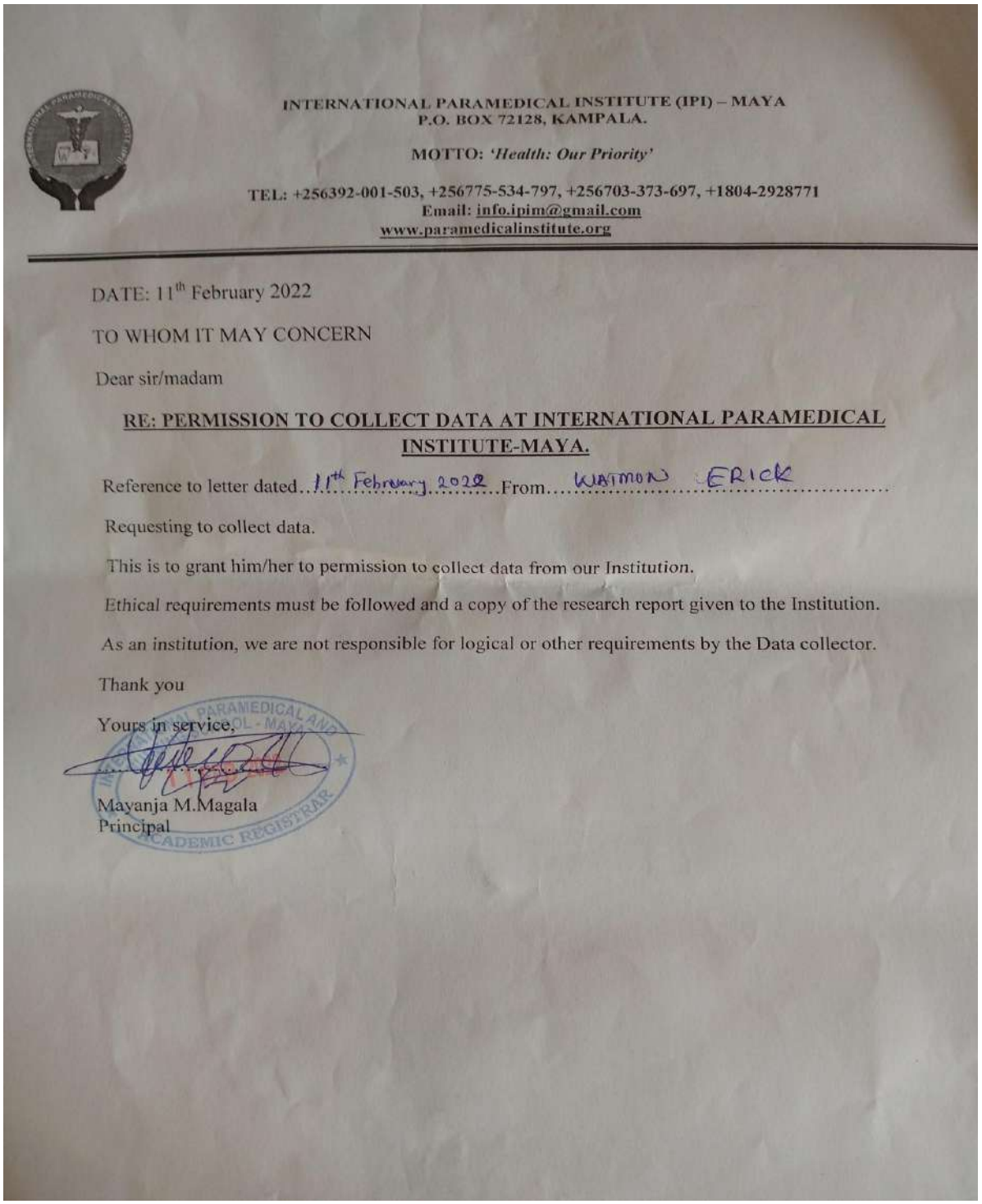
My name is Watmon Erick, a student of International Paramedical Institute, department of Clinical Medicine and Community Health. I am conducting this research for award of Diploma in Clinical Medicine and Community Health.
This focus group discussion guide is prepared to collect information on knowledge, attitude and practice among the adolescent girls and young women in International Paramedical Institute for research purposes. Your honest and genuine answer to the questions will have a great value to the research outcome. I would greatly appreciate your help in responding to these questions.

1. Condoms are used for prevention of pregnancy, HIVAIDS and other STIS, has any of you seen and heard about them?
2. For those who have seen the device do you know how it is used?
3. Where can you easily find condoms?
4. Do you know how to use female condom?
5. Who should use condoms?
6. How many of you have used condoms before? What was your experience?
7. Which type of condoms have you used before?
8. Do your partners easily accept to use of condoms or you have to negotiate their use?
9. Do you think condoms reduce sexual pleasure? Why?
10. For those who have not used them what are your reasons for not using them?

Appendix III: Map of Uganda showing Wakiso District



APPENDIX IV: Acceptance letter



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www.paramedicalinstitute.org

DATE: 11th February 2022

TO WHOM IT MAY CONCERN

Dear sir/madam

RE: PERMISSION TO COLLECT DATA AT INTERNATIONAL PARAMEDICAL INSTITUTE-MAYA.

Reference to letter dated 11th February 2022 From WATMON ERICK

Requesting to collect data.

This is to grant him/her to permission to collect data from our Institution.

Ethical requirements must be followed and a copy of the research report given to the Institution.

As an institution, we are not responsible for logical or other requirements by the Data collector.

Thank you

Yours in service,

Mayanja M.Magala
Principal

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Prevalence of Rifampicin Resistant Tuberculosis and its Associated Factors among Patients at Lubaga Hospital

Nakiboneka Winnie

ABSTRACT

A cross sectional descriptive study about prevalence of rifampicin resistant tuberculosis and its associated factors among patients was conducted on 384 TB patients at Lubaga hospital between March and April 2015. The patients were selected by simple random sampling and data was collected by use of a structured questionnaire and analysis done using SPSS version 17.

Rifampicin (RMP) is associated with the lowest occurrence of resistance against tubercle bacilli (Mukinda et al 2012). It is estimated that nearly 60,000 MDR- TB cases occur annually in the sub-Saharan region and these comprise of 14% of the global burden of TB (WHO 2010).

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The prevalence of rifampicin resistance according to this study's findings was 10%.

The predisposing factors to rifampicin resistance were cigarette smoking (P-Value = 0.001), history of prolonged stay with a TB infected patient, (P-Value = 0.001) and history of previous treated episode of TB among the study respondents (P-Value = 0.001).

The government of Uganda needs to carry out more intensified mass sensitization of people about the dangers of cigarette smoking particularly to HIV infected individuals.

In the same line of sensitization, people need to be continuously reminded by ministry of health about the signs and symptoms of TB so that community members can identify suspects and refer them for specialised diagnosis and management such that delayed detection of the disease is minimised which will also reduce on rifampicin resistance. It will also minimise exposure of people living with the infected individuals.

A Research Report Submitted to the Faculty of Hass of University O Kisubi in Partial Fulfillment of the Requirements for the Award of a Diploma in Medical Laboratory Technology .

Definition of Key Terms

MDR TB: This refers to a strain of TB that is resistant to isoniazid and rifampicin.

Sputum positive: A person known to have tubercle bacilli in their sputum when examined.

Immune compromised: This refers to a patient with a lower immune status than normal which makes him/her susceptible to infection.

I. CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Tuberculosis (TB) remains one of the world's leading causes of adult morbidity and mortality resulting in an estimated 8.8 million incident cases and 1.4 million deaths. Up to 92% of the TB cases occur in low and middle-income countries with sub-Saharan Africa region hosting nine of the highest TB incidence countries globally (WHO 2011). Uganda is ranked 16th among the 22 high burden countries (NTLP 2010). Treatment of tuberculosis lasts at least 8-months using a combination of first line drugs: Isoniazid, Rifampicin, Pyrazinamide, Ethambutol and Streptomycin. Rifampicin and Isoniazid both form an integral part of the initiation and continuation phase of anti-tubercular treatment regimens in all defined categories of patients (WHO 2010).

Rifampicin (RMP) is associated with the lowest occurrence of resistance against tubercle bacilli (Mukinda et al 2012). It is estimated that nearly 60,000 MDR- TB cases occur annually in the sub-Saharan region and these comprise of 14% of the global burden of TB (WHO 2010).

Rifampicin-monoresistant TB (RMR-TB) has been noted as a problem in the United States, particularly in HIV infected individuals (Sandman et al 2000). A study in the Western Cape of South Africa by Mukinda et al (2010) reported a 12 % prevalence of RMR-TB and found alcohol, HIV co-infection and other factors as predisposing factors to resistance. Studies done in some sub-Sahara African countries indicate low rates of MDR-TB defined as resistance to at least INH and RIF among new patients of TB. The prevalence of MDR-TB was 1.4% in Burundi, 1.2% in Tanzania, 2.6% in Gambia and 3.4% in Mozambique (WHO 2010). In Rwanda, the prevalence of MDR-TB was 3.9 % (Umubweyi et al 2011).

A study by Jones-Lopez et al (2011) in Mulago Hospital on TB patients reported a 23% prevalence of MDR-TB and a 1% prevalence of Rifampicin Mono resistance. Lukoye et al (2011), in a Kampala survey among new cases of TB reported a prevalence of MDR Tuberculosis of 1.1% and rifampicin mono resistance of 0.8%.

They however found no association between MDR and HIV co-infection. A survey done by Lukoye et al (2011) in Uganda among old and new cases of TB reported a prevalence of rifampicin resistance of 0.4% among 1209 new TB cases and a rifampicin resistance of 23% among previously treated cases. All Rifampicin resistant cases were also Multi-drug resistant. Rifampicin plays a prominent role in TB treatment as one of the first line TB drugs and it is important that this drug does not develop resistance because of the limited treatment alternatives available. Furthermore, detection of rifampicin resistance is important in directing clinicians in the making of informed decisions (Karenye 2013). A number of factors influence development of TB resistance which can be due to the patient adherence, the treatment regimen itself or pre-treatment factors. In 2001, the MoH through National Tuberculosis and Leprosy Program formally adopted the community-based TB Care (CBTBC) strategy to address the TB challenges in the country. Much as chronic cases can be detected using sputum smears and resistance made by microbiological cultures, there is a need to increase the case detection rates of new and old resistance cases if TB is to be put under control. Scaling up the use of the Genexpert which is a faster, accurate and robust method needs to be done expeditiously so that the burden of MDR-TB does not reverse gains made in both TB and the HIV fight.

1.2 Problem statement

Drug resistance among tuberculosis patients is a major and emerging threat to its control and treatment both globally and in Uganda and this threatens to reverse the gains made so far in the fight against tuberculosis. TB had a death rate of 5.3% and in 2007 it claimed 9.3 million lives a good number who were drug resistant (WHO 2008). No national study has been done on TB drug resistance so far. However, a study done in some parts of Uganda reported a Rifampicin resistance prevalence of 0.8% while a study among 214 admitted patients at Mulago National referral hospital in 2000 reported a rifampicin prevalence of 1.4% (Lopez et al 2011). While these rates appear low, concern has to be raised with regard to the reducing cure rates of TB by rifampicin and isoniazid as reported in South Africa which is no different from Uganda thus highlighting the need for closer scrutiny of these rates (Wright et al 2009).

No drug resistance study has been done among Lubaga hospital TB patients. There needs to be a more comprehensive study about TB drug resistance and particularly about rifampicin since this drug is a surrogate marker of MDR- TB.

Relapses seem to be on the rise in Lubaga hospital and cure rates are not exactly known. The need for more elucidation about the resistance of TB primary drugs needs to be done to aid the better management of all categories of TB patients in Lubaga hospital.

1.3 General objective

To determine the prevalence of rifampicin resistant tuberculosis and its associated factors among patients in Lubaga hospital.

1.4 Specific objectives

1. To determine the prevalence of rifampicin resistant TB among patients in Lubaga hospital.
2. To assess the major factors associated with Rifampicin resistance among TB patients in Lubaga hospital.

1.5 Research questions

1. What is the prevalence of rifampicin resistant TB among patients in Lubaga hospital?
2. What are the major factors associated with rifampicin resistance among TB patients in Lubaga hospital?

1.6 Significance of the study

The study generated new information with regard to rifampicin-TB resistance and its associated factors among patients at Lubaga hospital. This information generated can be used to improve TB such that resistance to TB treatment is minimised for better health.

The findings can also be used as a source of reference for people who wish to conduct further research in related areas of study.

The study has been used by the researcher as a partial requirement to be fulfilled for the award of a Diploma in Medical Laboratory Technology.

Since the introduction of the community based care programme of TB management by Ministry of Health, there have been major milestones achieved such as the treatment targets reaching 80% from 70%. However the emergence of resistance threatens to make TB incurable once again and treatment 100 fold more expensive. The need to address resistance is urgent and needs an extensive study to identify MDR-TB as early as possible to minimise resistance.

1.7 Scope of the study

This study was limited to TB patients at Lubaga hospital who consented to take part in the study between Apriland June 2015.

II. CHAPTER TWO: LITERATURE REVIEW

2.1 Prevalence of Rifampicin resistant TB

In a study about prevalence of rifampicin mono resistant mycobacterium tuberculosis among suspected cases accessing services at Yirgalem Hospital in Israel, a total of 236 participants were included under this study. Among these, 57.6% were males and 42.4% were female. Concerning to treatment history, 177 (75.0%) were new cases and the rest, 59 (25.0%) were old cases. The overall prevalence of pulmonary tuberculosis was 16.5% and out of these, the prevalence of rifampicin mono-resistant Tuberculosis was 3.4% (Mesfinand Teshome 2015).

According to a report by Fasih et al (2012), 7738 strains of Mycobacterium tuberculosis were isolated from pulmonary specimens submitted in an Iranian study from 2009 to 2011. These included 54% (n 4183) rifampicin susceptible and 46% (n: 3555) rifampicin resistant strains. Analysis of rifampicin susceptible strains showed resistance to at least one of the first line drugs in 27% (n: 1133) of the isolates.

In a study conducted about the global isoniazid resistance patterns in rifampicin-resistant and rifampicin-susceptible tuberculosis, out of the 673 strains tested, 95 (14.11%) showed mono-resistance, 365 (54.23%) strains were found to be resistant to more than one drug. A total of 118 (17.53%) strains were found to be resistant to all the four drugs tested. MDR was seen with 320 (47.54%) isolates. This study observed maximum resistance with rifampicin (74.4%) followed by streptomycin (70.0%), isoniazid (53.2%), and ethambutol (21.7%) (Menon, et al 2012)

The emergence and spread of multi-drug resistant tuberculosis (MDR-TB) is threatening to destabilize global tuberculosis control. The prevalence of MDR-TB is increasing throughout

the world even among newly diagnosed cases of sputum-positive pulmonary tuberculosis.A total of 218 cases of sputum-positive pulmonary tuberculosis were enrolled between 2008 and 2009 and of these, 41 (18.8%) cases had negative mycobacterial cultures and DST was carried out in 177 cases. The mean age of the patients was 27.8 ± 10.2 years; 59 patients (27%) were female. All patients tested negative for HIV infection. Out of 177 cases, two cases of MDR-TB were detected.

Thus, the prevalence of MDR-TB among newly diagnosed pulmonary tuberculosis patients was 1.1 per cent. (SurendraK et al 2010)

Studies done in the United States indicate that TB drug resistance had decreased down to 3% (CDC, 2004) while in neighboring East African countries such as Rwanda, a prevalence rate of rifampicin resistance of 3.9 % was reported and it was 2.7 % in Northern Tanzania (Kibiki et al 2007). A study done in Mbarara Uganda by Bazira et al (2011) reported a 5.6% prevalence of TB rifampicin resistance. A 1996-1997 National TB drug resistance survey reported 0.8% prevalence (Bretzel et al, 1998), while another study in the peri-urban areas of Kampala reported a prevalence of rifampicin resistance of 4.4 % (Nieman et al 2008). The differences in this figure might be due to the sampling strategies that were used in each of the studies above where one sampled the whole country while the other looked at one division of Kampala which is highly burdened with TB.

Identification of rifampicin-resistant tuberculosis is an important event, both for the individual patient and from a public health perspective, triggering a cascade of interventions, including additional drug susceptibility testing, appropriate patient referral for extended and potentially toxic treatment, and contact tracing. The definitive diagnostic test should therefore have very high specificity. A recent Cochrane review (6) estimated the sensitivity and specificity of Xpert for rifampicin resistance as 94% (95% CI, 87 to 97) and 98% (95% CI, 97 to 99), respectively.

With these parameters and a prevalence of rifampicin resistance of 5%, the positive predictive value of a rifampicin-resistant result on Xpert would be 71%. The measured positive predictive value in this study of the Xpert version 4 assay is 99.5% (95% CI, 98.47 to 100) (Muhammad et al 2011).

2.2 Major factors associated with Rifampicin resistant development TB

Mesfin et al (2015) conducted a study in which fifty eight (24.6%) of the total subjects were suspected for MDR tuberculosis. Twenty two (9.3%) of the subjects were smear positive andthe highest positive finding of rifampicin susceptible Mycobacterium tuberculosis bacilli were observed within the age group of 16-30 years.

Non-adherence to treatment is a problem in Tuberculosis (TB) management as with other long term illnesses which can be categorized into patient, drug and provider related factors (MoH 2011). TB treatment presents particular challenges for adherence because the treatment is long and involves taking a number of medications.

Side-effects are common and the patient usually feels better long before treatment has been completed coupled with a high pill burden in HIV patients (Macllean 2003). Non-adherence has been cited as one of the reasons for failure of achievement of the global treatment success rates by Uganda (WHO 2007). As a consequence retreatment failure has been singled out as the leading indicator of resistance failure. TB second line regimen entails in most cases use of one of the drugs previously taken in regimen one as recommended by the WHO thus when retaken, this compounds resistance of the TB to the drug such as rifampicin yet it tends to be more toxic (WHO 2008).

Transmission has been known to generate resistant genotypes even in those with good adherence. This is because in the process of transmission, strains develop new resistance capabilities hence creating resistance in the next host. Health care workers and those caring for the TB patient are at an increased risk of acquiring resistant strains. However transmission of an already existing strain has been observed among those who are exposed (Menon et al 2012).

There is a clear link between TB and HIV, with 13% of the global TB cases occurring among HIV infected individuals. Incidence of HIV-positive TB cases is even higher in Africa, where 79% of the newly diagnosed cases are found (WHO 2012).

According to Bazira et al (2011), TB resistance has been linked to HIV which has caused an increase in Mycobacterium tuberculosis complex (MTC) infection and rapid progression of the infection. It is also known to increase MTC transmission rates at the community level, further threatening the health and survival of HIV sero-negative individuals as well.

Among HIV infected patients on ART especially efaverinz, malabsorption of RMP and INH occurs and may be a contributing factor to consider, although the pharmacokinetics of RMP may be variable even without HIV (Gurumurthy et al 2004).Furthermore, it is possible that, in immune-compromised patients with TB, bacterial mutations confer drug resistance to anti-TB (Gagneux et al 2006).

According to Pablo-Mendez (1998), previous treatment has been widely recognised as inducing multidrug resistance of *M. tuberculosis* and the prevalence of MDR-TB has been estimated to be up to 10 times higher after unsuccessful treatment.

In a study carried out by Van et al *(*2010) in Cape Town, South Africa, tobacco smoking causes bronchitis, chronic obstructive pulmonary disease (COPD) and chronic pulmonary disability which are risk factors for MDR-TB. This implies that people who smoke cigarettes have nearly twice the risk of TB drug resistance than non-smokers.

Disease states including alcoholism and diabetes mellitus can increase the risk of developing tuberculosis. Certain medications, such as corticosteroids and infliximab (an ant i- α TNF monoclonal antibody) are becoming increasingly important risk factors for drug resistance, especially in the developed world (Rajani*et al*, 2013).

Delayed recognition of drug resistant TB due to poor detecting techniques, inappropriate chemo-therapy regimens, inadequate or irregular drug supply, and poor compliance by both patients and clinicians have each been reported as a reason for unsuccessful TB treatment (Pablo-Méndez A 1998).

III. CHAPTER THREE: METHODOLOGY

3.1 Study site

The study was carried out in Lubaga hospital. The hospital is located on Rubaga hill just adjacent to Lubaga cathedral, about 5km from the city Centre. Lubaga hospital is one of the oldest hospitals in Uganda having been founded in 1899, over 100 years ago. It is the second oldest hospital in the country and has offered health care to millions of people during its long history of existence. Over the years the hospital has built a reputation as a provider of affordable health care services and therefore has continued to attract and treat people of mainly mid-level and low level status. The hospital serves a low-income community of an official catchment area of 130,000 people in urban Kampala–Lubaga Division (KCCA data).

Lubaga Hospital is a 275 bed, private-not-for-profit hospital of the Archdiocese of Kampala. It provides medical services in pediatrics, maternity /gynaecology, internal medicine, surgery, Public Health, and HIV Care and Treatment.

In October 2012 the Board decided that the name of the hospital should be changed: from previously Rubaga Hospital to Lubaga Hospital.

The Board also clarified that the full name of the hospital is now “Uganda Martyrs Hospital Lubaga.”

3.2 Study design

Thiswas a cross sectional descriptive study that enrolled clients who were on TB treatment.

3.3 Study population

The study population comprised of all TB patients accessing services from Lubaga hospital during the time of the study.

3.4 Sample size determination

The sample size was determined following the formula Kish and Leslie (1965)

$N = \frac{Z^2 PQ}{d^2}$

Where: n = Sample size

Z =Standard normal deviation usually set at 95 % (1.96)

p =Prevalence. Using 50% as the prevalence since the prevalence of Rifampicin resistant TB is not known (0.5)

Q = (1-p) = (1-0.5) = 0.5

d =Standard error allowed in the study set at, 5% = (0.05)

Therefore $N = \frac{1.96^2 0.5 \; X \; 0.5}{0.05^2} = 384$

384 TB clients were enrolled into the study.

3.5 Selection criteria

3.5.1 Sampling method

Study participants were selected using simple random sampling method. For this research, 384 papers had the words "yes" written on them and another 384 papers had the words "no" written on them. The papers were carefully rolled in approximately similar ways before being shuffled in a cup. The TB clients were then asked to each pick a paper from the cup and only those picking the paper with the words "yes" were selected into the study. In the selection process, papers were shuffled after every pick.

3.5.2 Inclusion criteria

Only TB patients at Lubaga hospital TB clinic who were attending the TB clinic during the period of the study were eligible for enrolment into the study and were recruited if they consented to taking part in the study. For children, they were only enrolled upon consent of their parents or care takers.

3.5.3 Exclusion criteria

Non TB patients plus the ones who refused to consent during the time of study were excluded from the study.

3.6 Data collection tool

The instrument to be used for data collection was a structured questionnaire.

3.6 Data collection procedure and management

The structured questionnaire was self-administered for literate participants and interviewer-administered for illiterate clients. The questionnaire was reviewed to see if it was completely filled and all those questionnaires found to be partially filled in were handed back to their respective respondents for completion before re-submission to the researcher. One sputum specimen was also collected from the study participants and was analyzed by geneXpert machine (See appendix IV).

3.7 Data management and analysis

Data collected was stored in a data master sheet and transferred to Microsoft excel. Data was kept with utmost security by use of codes, passwords and encryption.

Data was exported to SPSS for Windows version 17 and analyzed with the help of a statistician.

Descriptive statistics were computed and presented in form of diagrams, measures of central tendency (especially the mean, mode, median) and measures of dispersion. Existence of any significant differences between patients' categories was investigated.

3.8 Quality control

Furthermore temperature logs, maintenance logs of the machine and routine maintenance were

used. Laboratory controls were run and monitored during the study period.

3.9 Ethical consideration

The researcher sought permission from Lubaga hospital research committee to do the study.

Information to be obtained from the respondents was treated with utmost confidentiality. Study numbers but not names were used on questionnaires for data collection as a way of keeping the respondents' identity anonymous.

Informed consent was also sought from each of the respondents before enrolling them into the study.

3.10 Dissemination of results

Results of the study were compiled into a research report, copies of which were disseminated to Lubaga hospital and the faculty of HASS of University of kisubi such that the information can spread to all concerned people.

IV. CHAPTER FOUR: RESULTS

4.1 Socio-Demographic Characteristics

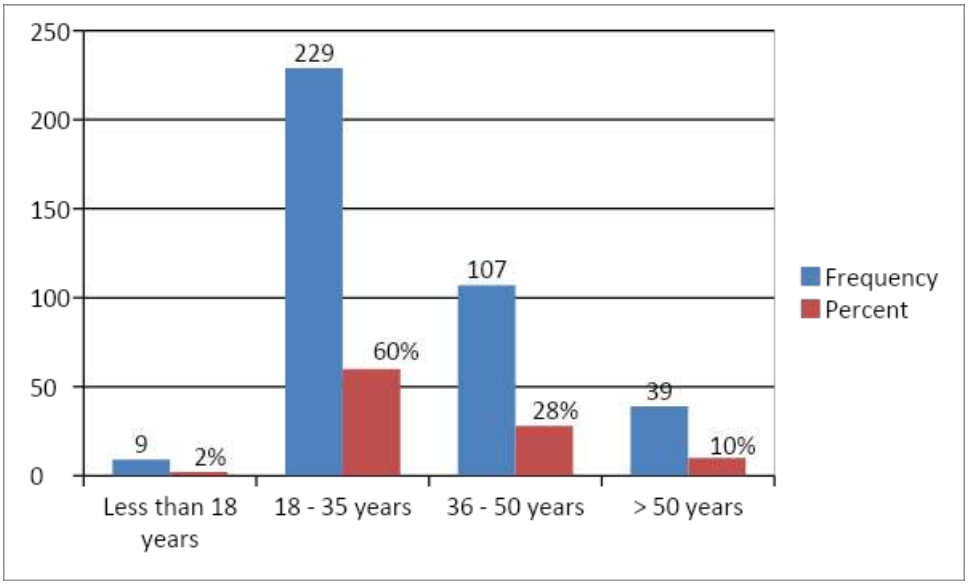

Figure 1: Distribution of the study respondents by their ages

Figure 1 above shows that 229 (60%) of the respondents were aged 18 to 35years, 107 (28%) were 36 to 50years, 39 (10%) were above 50years and 9 (2%) were less than 18 years.

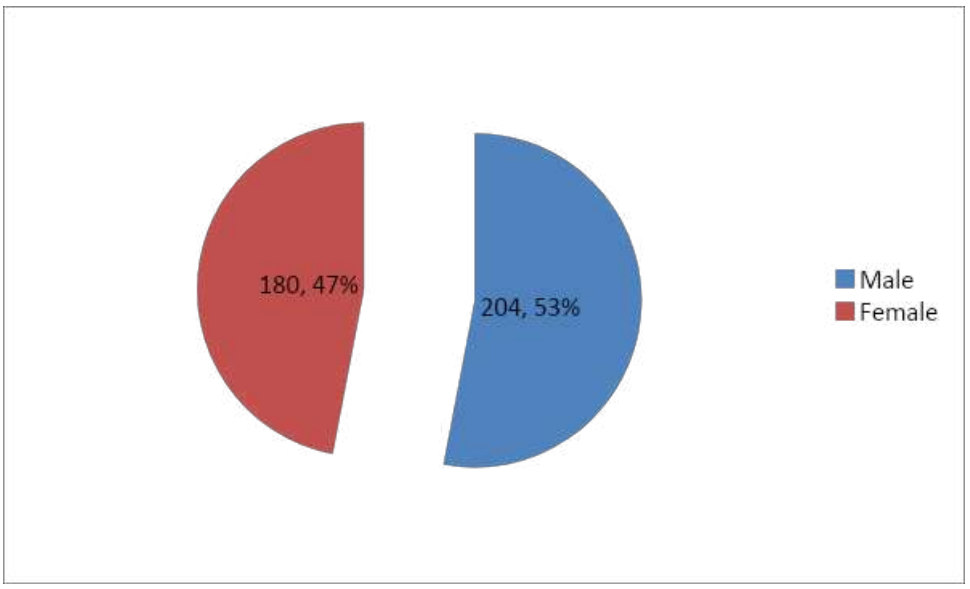

Figure 2: Distribution of respondents by their gender

Figure 2 above shows that 204 (53%) of the respondents were male and 180 (47%) were females.

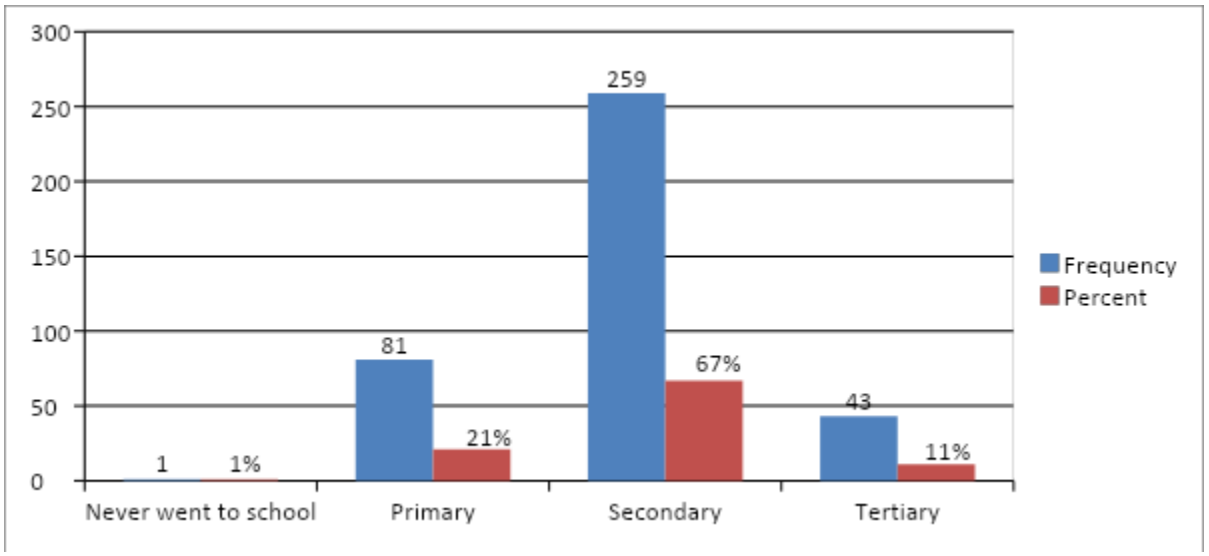

Figure 3: Distribution of respondents by their education status

Figure 3 above shows that 259 (67%) of the respondents had gone up to secondary school for their education, 81 (21%) had stopped in primary school, 43 (11%) had attained tertiary level of education and 1 (1%) was illiterate.

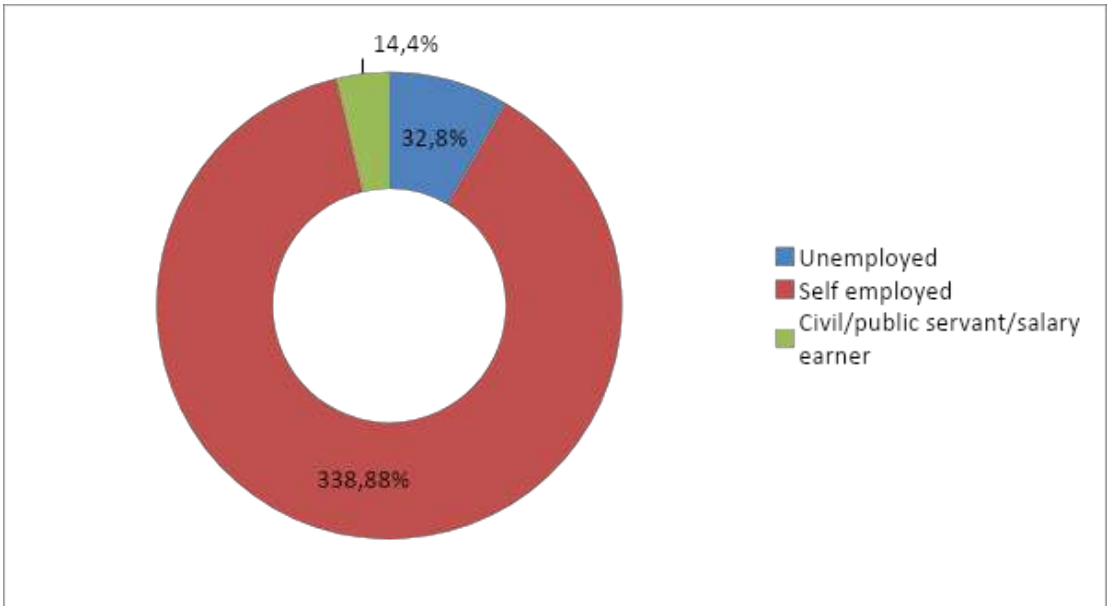

Figure 4: Distribution of respondents by their occupations

Figure 4 above shows that by occupation, 338 (88%) of the respondents were self-employed, 32 (8%) were unemployed and 14 (4%) were Civil/public servants/salary earners.

4.2 Prevalence of rifampicin resistant TB among patients in Lubaga hospital

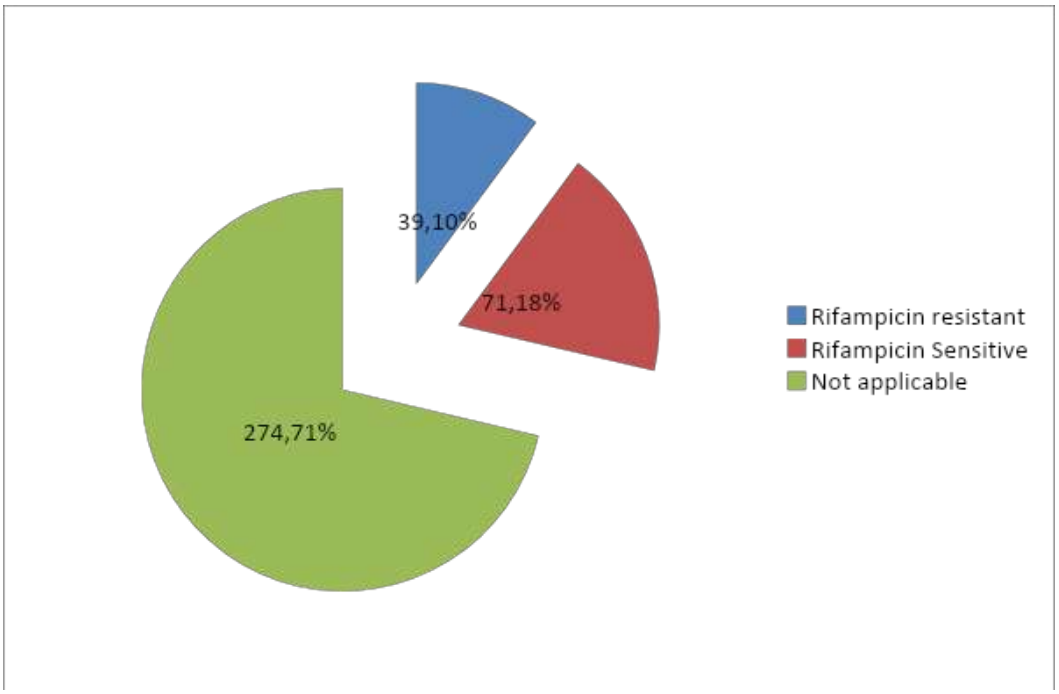

Figure 5: Showing rifampicin resistance among the study respondents

Figure 5 above shows that 39 (10%) of the respondents had rifampicin resistant strains of *Mycobacterium tuberculosis*, 71 (19%) had sensitive strains and 274 (71%) of the respondents had this non-applicable.

4.3 Factors associated with Rifampicin resistance among TB patients in Lubaga hospital

Table 1: History of previous TB treatment of the study respondents related with their rifampicin sensitivity status

		Have you been treated for TB before?		Total
		Yes	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	13	58	71
	Resistant	7	32	39
	Not Applicable	4	270	274
Total		24	360	384

P-Value = 0.001

Table 1 above show that of the 24 patients who had been treated for TB before, 13 had rifampicin sensitive tubercle bacilli, 7 had rifampicin resistant strains and for 4 respondents, this wasn't applicable. The table further shows that of the 360 respondents who had never been treated for TB before, 58 had rifampicin sensitive tubercle bacilli, 32 had rifampicin resistant strains and for 270, this was not applicable.

Table 2: Status of completion of treatment among previously TB positive patients related with their rifampicin sensitivity status

		If yes to question e) above, did you complete treatment		Total
		Yes	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	4	10	14
	Resistant	2	4	6
	Not Applicable	0	4	4
Total		6	18	24

P-Value = 0.438

Table 2 above shows that of the 6 respondents who had completed TB treatment before, 4 hand rifampicin sensitive tubercle bacilli and 2had rifampicin resistant tubercle bacilli strains. The table further shows that of the 18 respondents who hadn't completed the anti-TB treatment, 10 rifampicin sensitive tubercle bacilli, and 4 had rifampicin resistant tubercle bacilli strains and to 18 respondents, this wasn't applicable.

Table 3: History of prolonged contact with TB patient in respondent's history related with their rifampicin sensitivity

		Have you ever stayed with a TB patient or treated one		Total
		Yeas	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	2	69	71
	Resistant	3	36	39
	Not Applicable	1	273	274
Total		6	378	384

P-Value = 0.002

Table 3 above shows that of the 6 respondents who had ever had prolonged contact with a patient in their past, 2 had rifampicin sensitive tubercle bacilli,3 had rifampicin resistant tubercle bacilli and 1

had it not applicable. The table further shows that of the 378 respondents who had not had a prolonged stay with a TB patient in their past, 69 had rifampicin sensitive tubercle bacilli, 36 had rifampicin resistant tubercle bacilli and to 273 respondents, this was not applicable.

Table 4: Smoking status of respondents related with their rifampicin sensitivity status

Count		Do you smoke cigarettes		Total
		Yes	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	8	63	71
	Resistant	3	36	39
	Not Applicable	4	270	274
Total		15	369	384

P-Value = 0.001

Table 4 above shows that of the 15 respondents who were cigarette smokers, 8 had rifampicin sensitive tubercle bacilli, 3 had rifampicin resistant strains of tubercle bacilli and 4 had this as not applicable. The table further shows that of the 369 respondents who were not cigarette smokers, 63 had rifampicin sensitive bacilli, 36 had rifampicin resistant strains of tubercle bacilli and for 270 respondents this was not applicable.

Table 5: Alcohol consumption of respondents related with their rifampicin sensitivity status

Count		Do you drink alcohol		Total
		Yes	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	14	57	71
	Resistant	6	33	39
	Not Applicable	4	270	274
Total		24	360	384

P-Value = 0.001

Table 5 above shows that of the 24 respondents, who were consumers of alcohol, 14 had rifampicin sensitive tubercle bacilli, 6 had rifampicin resistant strains of the tubercle bacilli and for 4 respondents this was not applicable. The table further shows that of the 360 respondents who were non-alcohol consumers, 57 had rifampicin sensitive tubercle bacilli, 33 had rifampicin resistant strains of tubercle bacilli and to the 270 respondents this was not applicable.

Table 6: Marijuana or Cocaine or Mairungi use among respondents related with their rifampicin sensitivity status

Count		Do you use Marijuana or Cocaine or Mairungi		Total
		Yes	No	
Status of mycobacterium sensitivity to rifampicin	Sensitive	4	67	71
	Resistant	1	38	39
	Not Applicable	4	270	274
Total		9	375	384

P-Value = 0.116

Table 6 above shows that of the respondents, who were users of Marijuana or Cocaine or Mairungi, 4 had rifampicin sensitive tubercle bacilli, 1 had rifampicin resistance and to the remaining 4, it was not applicable. The table also shows that of the 275 respondents, who were not usingMarijuana or Cocaine or Mairungi, 67 had rifampicin sensitive tubercle bacilli, 38 had rifampicin resistant tubercle bacilli and to 270, this was not applicable.

Table 7: HIV status of the respondents related with their rifampicin sensitivity status

Count		What is your HIV status?		Total
		Positive	Negative	
Status of mycobacterium sensitivity to rifampicin	Sensitive	50	21	71
	Resistant	33	6	39
	Not Applicable	204	70	274
Total		287	97	384

P-Value = 0.256

Table 7 above shows that of the 287 respondents who were HIV positive, 50 had rifampicin sensitive tubercle bacilli, 33 had rifampicin resistance and 204 had the question as not applicable. The table also shows that of the 97 respondents who were HIV negative, 21 had rifampicin sensitive tubercle bacilli, 6 had rifampicin resistant bacilli and to 70 respondents, it was not applicable.

V. CHAPTER FIVE: DISCUSSION OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a discussion where this study's findings are compared with the findings of other authors in similar studies done prior to this one. In this chapter, conclusions are drawn and based on the research findings, recommendations are drawn.

5.2 Socio-Demographic Characteristics of the study respondents

It was revealed that majority, 229 (60%) of the respondents in this study were aged 18 to 35 years, followed by 107 (28%) who were 36 to 50 years old, then by 39 (10%) who were above 50 years and lastly by 9 (2%) respondents who were less than 18 years old (Figure 1).

Slightly more than half, 204 (53%) of the respondents were male and 180 (47%) were females (Figure 2) whereas by educational status, slightly more than two thirds, 259 (67%) of the respondents had gone up to secondary school, about one fifth, 81 (21%) had stopped in primary school, about one tenth 43 (11%) had attained tertiary level of education and 1 (1%) were illiterate (Figure 3).

By occupation, 338 (88%) of the respondents were self-employed, 32 (8%) were unemployed and 14 (4%) were Civil/public servants/salary earners (Figure 4).

5.3 Prevalence of rifampicin resistant TB among patients in Lubaga hospital

Up to 10% of the respondents had rifampicin resistant strains of *Mycobacterium tuberculosis* and this reveals a prevalence of rifampicin resistance of 10%. This finding is a little higher than the prevalence of rifampicin mono-resistant Tuberculosis of 3.4% reported in a study by Mesfinand Teshome (2015). The prevalence finding of rifampicin resistance of 3.9% in Rwanda and 2.7% in Tanzania is also lower than this study's prevalence of 10% reported by Kibiki et al (2007).

Some studies done by Bazira et al (2011) and Nieman et al (2008) reported prevalences of 5.6% and 4.4% respectively in other Kampala studies which were also lower than this study's prevalence of rifampicin resistance of 10%.

This study's prevalence findings of 10% is however lower than the prevalence of rifampicin resistance of 46% reported in an Iranian study by Fasih et al (2012) and the prevalence of 74.4% reported by Menon, et al (2012)

5.4 Factors associated with Rifampicin resistance among TB patients in Lubaga hospital

It was discovered in this study that out of the 24 patients who had been treated for TB before, 13 had rifampicin sensitive tubercle bacilli and 7 had rifampicin resistant strains (Table 1; P-Value = 0.001). This shows that a strong association existed between the two variables and as such makes the finding to be similar to that of Pablo-

Mendez (1998), who reported that previous treatment was widely recognised as inducing multidrug resistance of *M. tuberculosis*.

Of the 6 respondents who had completed TB treatment before the current relapse, 4 had rifampicin sensitive tubercle bacilli and 2 had rifampicin resistant tubercle bacilli strains (Table 2., P-Value = 0.438). Based on the p-value, there was no significant statistical association between completion of treatment and sensitivity and makes this finding contrary to the observation made by (WHO 2007) that non-adherence is one of the reasons for failure of achievement of the global treatment success rates of TB by Uganda.

In this study, 6 respondents had had prolonged contact with a patient in their past and out of these, 2 had rifampicin sensitive tubercle bacilli, 3 had rifampicin resistant tubercle bacilli,P-Value = 0.001 (Table 3). It is possible that there was delayed recognition of TB in the patients they had lived with such that those patients had developed rifampicin resistant strains which they had passed on to this study's respondents who in turn developed rifampicin resistance which relates with the findings of Pablo-Méndez A (1998).

There was a total of 15 respondents who were cigarette smokers, and of these, 8 had rifampicin sensitive tubercle bacilli whereas 3 had rifampicin resistant strains of the tubercle bacilli (Table 4, P-Value = 0.001). This implies that cigarette smoking increased ones chances of getting resistance to rifampicin which is in line with the findings of Van et al(2010) who in a study carried out by in Cape Town, reported that tobacco smoking causes bronchitis , chronic obstructive pulmonary disease (COPD) and chronic pulmonary disability which are risk factors for MDR-TB. This implies that people who smoke cigarettes have nearly twice the risk of TB drug resistance than non-smokers.

According to this study, there were 24 respondents who were consumers of alcohol and out of these, 14 had rifampicin sensitive tubercle bacilli and 6 had rifampicin resistant strains of the tubercle bacilli (Table 5; P-Value = 0.116). Based on this study's p-value, alcohol consumption was not statistically associated with rifampicin resistance which makes it a contrary finding to the findings of Rajani*et al*, (2013) who reported in part that alcoholism an increasingly becoming an important risk factor for TB drug resistance.

Among the 9 Marijuana or Cocaine or Mairungi users in this study, 4 of them had rifampicin sensitive tubercle bacilli whereas 1 had rifampicin resistance (Table 6, P-Value = 0.116). This shows that there was no significant association between these drugs and rifampicin resistance.

Of the 287 respondents in this study who were HIV positive, 50 had rifampicin sensitive tubercle bacilli and 33 had rifampicin resistant strains (Table 7). Though by numbers there seems to be a variation between rifampicin sensitive tubercle bacilli and rifampicin resistant strains wasn't statistically significant (P-Value = 0.256). This is contrary to the findings of Bazira et al (2011), who reported TB treatment resistance as linked to HIV.

VI. CONCLUSIONS

The prevalence of rifampicin resistance according to this study's findings was 10%.

The predisposing factors to rifampicin resistance were cigarette smoking (P-Value = 0.001), history of prolonged stay with a TB infected patient, (P-Value = 0.001) and history of previous treated episode of TB among the study respondents (P-Value = 0.001).

VII. RECOMMENDATIONS

The government of Uganda needs to carry out more intensified mass sensitization of people about the dangers of cigarette smoking particularly to HIV infected individuals.

In the same line of sensitization, people need to be continuously reminded by ministry of health about the signs and symptoms of TB so that community members can identify suspects and refer them for specialised diagnosis and management such that delayed detection of the disease is minimised which will also reduce on rifampicin resistance. It will also minimise

exposure of people living with the infected individuals.

ACKNOWLEDGEMENT

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List of Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
CT	Cycle Threshold
DNA	Deoxy Ribonucleic Acid
DST	Drug Susceptibility Testing
HAART	Highly Active Anti-retroviral Therapy
HIV	Human Immuno-deficiency Virus
INH	Isoniazid
LPA	Line Probe Assay
MDR	Multi- drug resistant
MoH	Ministry Of Health
MTB	Mycobacteria Tuberculosis
MTC	Mycobacteria Tuberculosis Complex
NTLP	National Tuberculosis and Leprosy Programme
PCR	Polymerase Chain Reaction
RIF	Rifampicin or its derivatives such as rifabutin
RIFR	Rifampicin Resistant
RMR	RifampicinMonoresistant Strain
RNA	Ribonucleic Acid
RT	Real Time
TB	Tuberculosis
WHO	World Health Organisation

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APPENDICES

Appendix I: Consent Form

My name is Nakiboneka Winnie, a final year student of university of Kisubi pursuing a diploma in medical laboratory technology currently doing a study entitled 'Prevalence of rifampicin resistant TB among patients in Lubaga hospital. You have been chosen as one of the participants in this study to provide us with answers which the questionnaire will ask you. Participation in this study is voluntary and you may leave it at any time if you so wish but will still be able to access services from the hospital.

You will be able to know about your resistance status of TB treatment and if found to be resistant, your doctor will be notified so that you can be treated accordingly.

I have read and understood the condition written herein or I have got an explanation about the study and have willingly accepted to take part in it

Signature/thumb print of participant.....Date.....

Appendix Ii: Questionnaire

Topic: Prevalence of Rifampicin Resistant Tuberculosis Among Patients in Lubaga Hospital

Participant's ID No.....

Instructions to study participants

Tick the answer of your choice or fill your answer in the spaces provided

Section A: Socio-Demographic Characteristics

a. What is your age in years? _____-

b. What is your gender?

1. Female 2. Male

c. What is your highest level of education attained?

1. Never gone to school
2. Stopped in primary school
3. Stopped in secondary school
4. Attained tertiary education

d. What is your occupation?

1. Unemployed 2. Self-employed 3. Civil/public servant/salary earner

Section B: Prevalence of rifampicin resistant TB among patients in Lubaga hospital

(e) Gene expert result

1) MTB positive 2) MTB negative

(f) If gene expert MTB positive, the result is.....

1) Very low 3) Medium
2) Low, 4) High

f) Status of mycobacterium sensitivity to rifampicin
   1) Sensitive 2) Resistant

Section C: Factors associated with Rifampicin resistance among TB patients in Lubaga hospital

g) Have you been treated for TB before?
   1) Yes 2) No
h) If yes to question e) above, did you complete treatment
   1) Yes 2) No
i) If no to question j) above, why?
   .....
j) Have you ever stayed with a TB patient or treated one
   1) Yes 2) No
k) Do you smoke cigarettes
   1) Yes always 3) No
   2) Yes sometimes
l) Do you drink alcohol?
   1) Yes always 3) No
   2) Yes sometimes
m) Do you use Marijuana or Cocaine or Mairungi?
   1) Yes 2) No
n) What is your HIV status?
   1) Positive 3) I don't know
   2) Negative
o) Do you have diabetes mellitus?
   1) Yes 3) I don't know
   2) No
p) Do you have a chronic cough?
   1) Yes 2) No

Appendix Iv: Specimen Collection and Processing Procedures

Sputum sample collection

The participants were provided with a sterile sputum collection container and then were instructed on how to collect a random sputum sample that very day of about 2 - 5mls.

The patient was then provided with a sterile collection container which was pre-labeled with their study number. Patient isolated him/herself in a well aerated space then coughed/expectorated with a productive cough into the container. Sample was then placed in a sample bag then brought to the laboratory where it was accessioned and clerked into the already established system following the standard operating procedures for acceptance or rejection of the sample. The samples were then analysed following the standard operating procedure by Gene Xpert analysis.

Sample storage

Samples were stored in a safety cabinet until analysis was done. For the samples which were not to be worked on that very day, they were kept in a fridge before being worked on.

Sample processing and analysis

The Xpert MTB/RIF assay (Cepheid, Sunnyvale, CA) detects the presence of MTBC DNA and its susceptibility to rifampicin (RMP) in a single reaction. The assay is based on a heminested real-time PCR (RT-PCR) that targets the *rpoB* gene hot spot region. Any deviation from the wild type sequence

resulting in a delay in the appearance of the signal exceeding a predetermined CT value, between the earliest and latest cycle threshold (CT) values is reported as RIF resistant. The test is carried out within 2 hours in a disposable cartridge. The only manual step was the mixing of a bactericidal buffer with the sample prior to addition to the cartridge (Van Rie et al 2010).

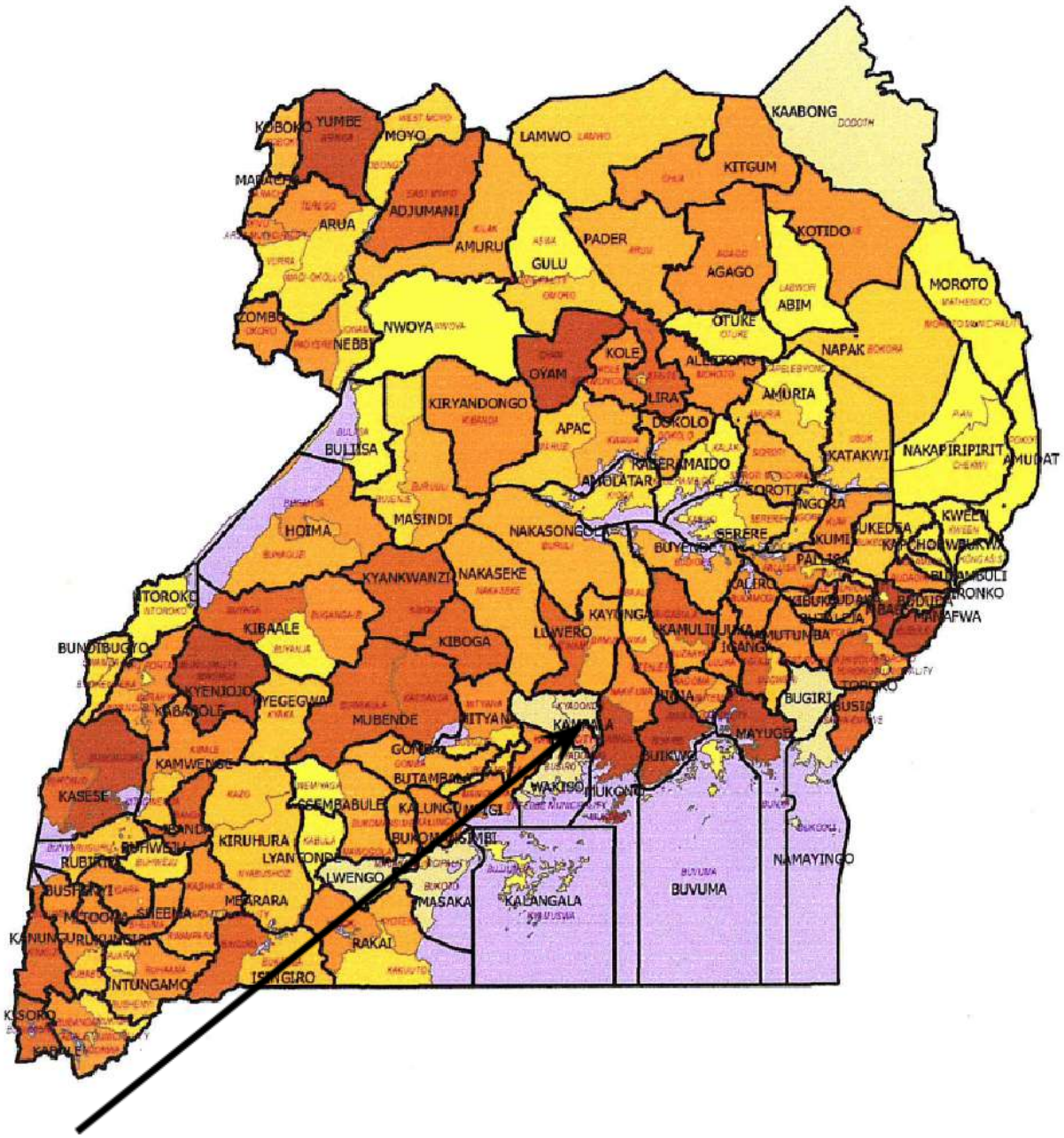
Waste collected from the study was disposed as per standard guidelines of the laboratory regarding sharps, infectious agents and other waste.

Procedure

- Each XpertMTB/RIF cartridge was labeled with a sample ID written on the side of the cartridge such that it did not obstruct the cartridge barcode.
- XpertMTB/RIF sample reagent was added to fresh sputum samples in a ratio of 2:1 i.e. 2 parts sample reagent to 1 part sample.
- The mixture was shaken vigorously 20 times then allowed to stand for 10 minutes. One back and forth movement was taken as a single shake. After 10 minutes, the mixture was shaken 20 times then allowed to stand for 5 minutes.
- Using the sterile pipette provided in the cartridge kit, the liquefied sample was aspirated until the liquefied sample meniscus, was above the minimum mark. No further processing was done if there was insufficient in volume i.e. <2 ml.
- Efforts were made to ensure that the liquefied sample being transferred to the cartridge had no bubbles as this could cause an error
- The cartridge lid was opened and the sample-reagent mixture transferred into the sample port of Xpert MTB/RIF cartridge.
- Once the sample had been loaded, the cartridge was closed making sure the lid snapped shut firmly into place.
- The patient I.D was scanned or patient's details entered manually then the cartridge barcode scanned.
- The cartridge was loaded into the assigned GeneXpert cartridge bay or module and the test run started. This was done within 30 minutes of loading the sample into the cartridge.
- The test took 2 hours to give results.

NB: The cartridge that had been standing and opened for more than 30 minutes was not used and also no cartridge was re-used in performance of the test.

Appendix VI: Map of Uganda Showing Kampala District



Kampala district

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Study the Incidence of Early Breast Cancer in Southern Odisha and Number of Bct Performed

Dr. Soumya Ranjan Jena, Dr. Sanjit Kumar Nayak, Dr. Santosh Kumar Patro & Dr. Tapan Kumar Malla

ABSTRACT

Background: Breast carcinoma is considered as one of the best studied cancers that affect the mankind. The understanding of cancer breast has undergone a lot of change in recent years and many more modalities of treatment advocated. No single modality of treatment can be the mainstay of therapy. One of them is breast conservation treatment (BCT) comprises BCS and whole breast radiotherapy. But in India, BCT is not popular among the surgeons (11-23% vs. > 60-70% in west). The advantages of BCS over MRM include, better body image, sexual functioning and better psychological adjustment. In view of this, the present study was undertaken to highlight the importance of BCT and comparison of post-operative events with MRM.

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ABSTRACT

Background: Breast carcinoma is considered as one of the best studied cancers that affect the mankind. The understanding of cancer breast has undergone a lot of change in recent years and many more modalities of treatment advocated. No single modality of treatment can be the mainstay of therapy. One of them is breast conservation treatment (BCT) comprises BCS and whole breast radiotherapy. But in India, BCT is not popular among the surgeons (11-23% vs. > 60-70% in west). The advantages of BCS over MRM include, better body image, sexual functioning and better psychological adjustment. In view of this, the present study was undertaken to highlight the importance of BCT and comparison of post-operative events with MRM.

Aim and Objective:

- *To study the incidence of early breast cancer in southern part of Odisha, India and number of BCT performed at M.K.C.G. Medical College and Hospital, Berhampur from August 2018 to June 2021.*
- *To evaluate the possibility of BCT in cases of LABC after neo-adjuvant chemotherapy.*
- *To compare BCT with MRM in terms of quality of life and postoperative complications.*

Patients and Methods: The present study was carried out in the PG department of General Surgery and Oncosurgery Wing of M.K.C.G. Medical College & Hospital from August 2018 to June 2021 (including 12 months of follow up period).

After reception at outpatient departments, all the patients are registered and their physical examination and required investigations were carried out after taking proper informed consent. Detailed assessments of cases are done according to preformed proforma.

Total no of cases included in this study are 20. We have selected stage I & II and few cases of stage III A for our study.

Results: In our study, as the study period is only 2 years and follow-up period was only 12 month, so overall survival is 100% for both BCT & MRM. Recurrence rate for BCT is 15% and for MRM is 5%. Out of Several studies maximum show that overall survival rate for both BCT and MRM group are almost same and comparable. Recurrence rate in case of BCT is high as compared to MRM except in study of Fisher et al and Blichert-Toft et al where recurrence rate in MRM is high.

Conclusion: It is a challenge for a surgeon to do BCS in early breast cancer case, as till now both the patients and the surgeons are in favour of MRM for reasons of safety and due to fear of recurrences. We felt that both the surgeons in the periphery and the women folks need to be made aware about the huge benefits of BCT in comparison to MRM. While selecting the patients, proper criteria must be adhered to. Radiation is a must after BCT but failing, for which the incidence of local recurrences goes up.

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I. INTRODUCTION

Breast carcinoma is considered as one of the best studied cancers that affect the mankind. It is quite natural that the disease of the breast and surgery on it should evoke a fear of mutilation and lose of femininity because breast has always been a symbol of womanhood and ultimate fertility.

Cosmetic consideration, ignorance regarding the breast tumour and fear of losing femininity have hindered its early diagnosis. This is specially so in developing countries like India where about 70% of female population are illiterate. This is the main cause of late presentation of breast cancer where breast conservation surgery is not possible.

The understanding of cancer breast has undergone a lot of change in recent years. No single modality of treatment can be the mainstay of therapy.

Surgery for operable breast cancer has evolved a long way since W. Halsted first described radical mastectomy in 1894. In order to lessen the cosmetic and functional morbidity associated with classical radical mastectomy, various modifications were described by Patey, Madden and Auchinclaus to name a few. Further, contributions from Keynes, Atkins et al, Mustakallio, Hayward and others, firmly established the breast conserving techniques[1,2,3,4].

Veronosi et al described their results of Quadrentectomy with axillary dissection and radiotherapy (QUART)[5]. At present, most common surgical options for operable breast cancer are modified radical mastectomy (MRM) with or without reconstruction and breast conservation surgery (BCS). Choice of the procedure depends on various factors like surgeon's training, patient's desire, size of the tumour to breast ratio, the presence of contraindications for conservation and availability of radiotherapy facilities.

In spite of tremendous development in the field of breast carcinoma management, a standard management protocol is yet to be developed. In view of this, the present study was undertaken to highlight the importance of BCT and comparison of post-operative events with MRM.

II. AIM AND OBJECTIVE OF THE STUDY

- To study the incidence of early breast cancer in southern part of Odisha, India and number of BCT performed at M.K.C.G. Medical College and Hospital, Berhampur from August 2018 to June 2021.

Materials: The present study was carried out in the PG department of General Surgery and Oncosurgery Wing of M.K.C.G. Medical College & Hospital from August 2018 to July 2021 (including 12 months of follow up period).

Inclusion criteria

- Small tumours in comparison to the breast size.
- Younger Age patients.
- Patient Compliance to take up radiotherapy after BCT.
- Stage I & Stage II carcinoma

Exclusion Criteria

- Locally advanced Breast Cancer (LABC)
- Multicentric breast cancer.
- Diffuse (malignant) micro-calcifications.
- Carcinoma with Pregnancy.
- Patients with mutations on BRCA-1 &2 genes (strong family H/O Breast carcinoma)
- History of radiation
- Advanced carcinoma breast
- Patient not willing for post op radiation therapy

Total no of cases included in this study are 20. We have selected stage I & II and few cases of stage III A for our study.

III. METHODS

After reception at outpatient departments, all the patients are registered and their physical examination and required investigations were carried out after taking proper informed consent. Detailed assessments of cases are done according to preformed proforma.

Routine Investigations

Blood Counts, LFT, Serum Profile, etc.

Special Investigations

Core needle Biopsy, ER, PR, HER2 neu receptor status, CT scan of Abdomen and Pelvis, X ray Chest, X ray Brain and Spinal cord, Ultrasound of Breast and Axilla.

IV. RESULTS AND DATA ANALYSIS

The present study of "Breast Conservation Surgery in carcinoma" was conducted on the patients of early breast cancer and cases of LABC were admitted in the indoor of Dept, of General surgery of MKCG Medical College & Hospital, Berhampur, during the period from August 2018 to July 2021.

Table-1: Distribution of Cases

Total Malignancy	No. of Carcinoma Breast	No. of Early Breast Cancer	No. of BCS Performed
1012	114	21	20

Table-2: Age Distribution of Breast Cancer

Age in years	No. of patients	Percentage
31-40	11	55
41-50	06	30
>50	03	15

Table-3: Age at Menarche

Age in years	No of patients	Percentage
<15	15	75
15-20	5	25

Table-4: Marital Status

Status	No. of patients	Percentage
Married	19	95
Unmarried	01	5

Table-5: Age at First Child Birth and Breast Feeding

Age in years	No. of Patients	Percentage
<20	2	10%
20-30	12	60%
>30	2	10%

Table-6: Type & Duration of Symptoms

Symptoms (type)	Duration	No. of patients	Percentage
Lump	<6 month	5	90
	6-12 month	13	
Axillary Lymph Node	6-12 month	13	65

Table-7: Side of Involvement

Side	No. of Patients	Percentage
Right	13	65
Left	7	35

Table-8: Site (Quadrants) of Involvement

Site (Quadrant)	No. of Patients	Percentage
Upper outer	8	40
Lower outer	5	25
Upper inner	4	20
Lower inner	3	15

Table-9: Investigations

Findings (%)	Number Of Patients	Percentage
Ultrasound Of Breast	08	100
Ultrasound Of Axilla	11	55
Trucut Biopsy	20	100
FNAC Of Axillary Lymph Nodes	13	65
X-Ray Mammogram of Breast	12	100
+Ve X-Ray Chest	0	0
+Ve X-Ray D-L Spine	0	0

Table-10: Histopathological Results

Type	No. of Patients	Percentage
Infiltrating Ductal Carcinoma	18	90
Infiltrating Lobular Carcinoma	02	10
Axillary Lymph Nodes Positive	15	75
Tumor Free Resected Margin (Microscopical)	19	95

Table-11: TRU-CUT Biopsy Result

Result	No. of patients	Percentage
ER &PR Positive, HER 2 neu (-)	18	90
Triple Negative	02	10

Table-12: Early -Post Operative Complications

Early Complication	No. of Patients		Percentage	
	BCS N=20	MRM, N=20	BCS N=20	MRM, N=20
Hemorrhage	0	1	0	5
Infection	2	4	10	20

Table-13: Late-Post Operative Complications

Late Complications	No. of Patients		Percentage	
	BCS N=20	MRM, N=20	BCS N=20	MRM, N=20
Neuralgia	3	4	15	20
Lymphoedema	2	3	10	15
Wound gaping	2	4	10	20
Seroma	1	1	5	5

Table-14: Our Study Results

Clinical Stage	No. of Patients	Disease Free Survival over 1 year		Local recurrence	
		No. of Patients	Percentage	No. of Patients	Percentage
IA	2	2	100	0	0
IIA	8	8	100	0	0
IIB	7	6	85.71	1	14.28
IIIA	3	1	33.33	2	66.67
Total	20	17	85.00	3	15.00

V. DISCUSSION

5.1 Indian Scenario

Over 100000 new breast cancer patients are estimated to be diagnosed annually in India[6,7]. As per recent ICMR (2017) data, breast cancer is the commonest cancer among the women in urban areas of Delhi, Mumbai, Ahmadabad, Kolkata, Trivandrum, where it constitutes more than 30%of all cancers in female[8]

It is estimated that of the 100000 patients that are treated for breast cancer In India, only about 1000 are treated for breast conserving therapy[9]. A study from Delhi40 showed only 11.3% underwent BCS, while MRM was performed in 88% cases. BCT in India ranges from 11-23% whereas in western countries it ranges from 60-70%.

A total of 74,861 cancer inpatients were registered at AHRCC between the year 2001-2011. The number of female cases increased four folds and that of males three-fold over this period. Carcinomas of breast (28.94%), cervix (23.66%) and ovary (16.11%) were leading among females[10].

Breast conservation has become the standard of care in Western countries for early breast cancer[11,12,13]. In India, BCT is still not popular due to various reasons like advanced stage at the time of presentation, lack of screening programmes, lack of awareness amongst surgeons and patients, fear of recurrence[14]. In the recent years, many centres have come up with appropriate equipment and infrastructure facilities, which will influence the treatment and outcome of patients with breast cancer in India. Now, with the latest technology, it is possible that every patient with breast cancer can have option of conserving breast which will have tremendous impact on her psychological and social health[15]. Worldwide trend to conserve breast has increased over years, which is also reflected in the present study as well as other studies from India[16]. Such a trend could be attributed partly to the early detection by wide spread use of mammography.

In our hospital admission from August 2018 to July 2021, a total of 1012 patients were diagnosed with cancers of different organs. Carcinoma breast was diagnosed in 114 patients which brought the incidence to be 11.2% of total malignancies. This incidence was in conformity with the observation of Reddy and Reddy (1958) from Visakhapatnam, Tyagi et al (1965) from Kanpur and Jussawal and Gangadharan (1974), whose Findings were 11.1%.

5.2 Age distribution of Disease

In this study, the youngest patient in our series was 33 year and oldest was 53 years. Majority of patient presenting with early-stage breast cancer were in the 31–40-year age group, with mean age of 36 years.

Age distribution of cases showed that 55% of all cases were under the age of 40 and 45% of cases were above the age of 40. In India, the average age of developing breast cancer has undergone significant shift over the last few decades. 25 years back, out of every 100 breast cancer patients, 2% were in 20-to-30-year age group, 7% were in 30 to 40 group and so on. 69% of the patients were above 50 years of age. Presently, 4% were in 20-to-30-year age group, 16% were in 30-to-40-year age group, 28% were in 40-to-50-year age group. Almost 48% patients were below 50-year age. An increasing number of patients are in 25 to 40 years of age and this definitely is a very disturbing trend.

5.3 Disease Distribution among the Social Status

Breast carcinoma is more prevalent in the upper middle class, according to "International Journal of western lifestyle". In our series, we have cases of both early breast cancer and LABC. While most early cancers came from educated and good socioeconomic group, patients with LABC were mostly from low socio-economic group.

5.3 Plan of Treatment in Early-Stage Breast Cancer Patients

Treatment planned in early-stage breast cancer patients (stage I stage IIA, stage IIB) was BCT, i.e.; wide local excision of the tumour with axillary node dissection followed by radiotherapy. All (except stage 1) cases were subjected to systemic adjuvant chemotherapy after radiotherapy. NACT was given to the patients of locally advanced breast cancer in stage IIIA to downstage and downsize the tumour so that it becomes suitable for BCT.

5.4 Neo-adjuvant Chemotherapy with AC/CAF/ Paclitaxel alone

Base-line clinical documentation of the disease and staging is done in each patient. Neo-adjuvant chemotherapy is instituted taking the BMI of the patient. Clinical documentation of response is done at each cycle for evaluating the primary tumour & nodal size till maximum tumour shrinkage is achieved. Patients are usually offered 3-4 cycles of NACT[17] and then evaluate for CR/PR/NR. Surgical treatment option is either BCT or MRM depending up on the response to NACT. Dose of chemotherapy regimens was applied.

The response to neo-adjuvant chemotherapy was evaluated by physical examination and ultrasonography or mammography. Clinical responses were defined by the primary tumour and axillary lymph node response and were categorized as follows : complete response (CR) = total resolution of the breast mass and axillary adenopathy on physical and radiographic examination ; partial response (PR) = 50% or greater diminution of bi-dimensional tumour or axillary lymph nodes ; stable disease (SD) = no more than 25% increase or decrease in tumour size or no change in lymph node ; progressive disease (PD) = more than 25% increase in tumour.

5.5 Adjuvant Hormone Therapy

Literature has shown that women treated for ER+ breast cancer benefit from receiving at least 5 years of adjuvant hormone therapy. Tamoxifen has been approved by the FDA for adjuvant hormone treatment of premenopausal and postmenopausal women (and men) with ER+ breast cancer, anastrozole and letrozole have been approved for this use in postmenopausal women.

A third aromatase inhibitor, Exemestane is approved for adjuvant treatment of breast cancer in post-menopausal women who have received Tamoxifen previously.

Until recently, most women who received hormone therapy to reduce the chance of a breast cancer recurrence took tamoxifen every day for 5 years[18]. However, with the advent of newer hormone therapies, some of which have been compared with tamoxifen, additional approaches to hormone therapy have become common. For example, some women may take aromatase inhibitor every day for 5 years instead of tamoxifen. Other women may receive additional treatment with an aromatase inhibitor after 5 years of tamoxifen. Finally, some women may switch to an aromatase inhibitor after 2 or 3 years of tamoxifen, for a total of 5 or more years of hormone therapy.

Decisions about the type and duration of adjuvant hormone therapy must be made on an individual basis. This is best carried out by an oncologist. Commonly used hormone therapy is given below:

- Tamoxifen: (if ER/PR +ve) for a period of 5 years.
- Anastrozole: 2.5 mg /day for a period of 5 years.

In our study, all patients underwent BCT and 90% of total patients (18) were offered Tamoxifen (20mg) and 10% patients (2) were offered Anastrozole as their adjuvant hormonal therapy.

5.6 Postoperative Radiotherapy

If adjuvant chemotherapy is indicated after wide local excision, it should be given after radiation therapy is completed. All patients undergoing BCS should receive radiation therapy of 38.5Gy in 10 fractions delivered twice per day in a week for 5-6 week with external beam phototherapy to the tumour bed is recommended. This guide line is as per the NCCN Guidelines[21] Version 1.2015, BREAST CANCER.

VI. CONCLUSION

It is a challenge for a surgeon to do BCS in early breast cancer case, as till now both the patients and the surgeons are in favour of MRM for reasons of safety and due to fear of recurrences. We felt that both the surgeons in the periphery and the women folks need to be made aware about the huge benefits of BCT in comparison to MRM. While selecting the patients, proper criteria must be adhered to. Radiation is a must after BCT but for which the incidence of local recurrences goes up.

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Tobacco Smoking and its Susceptibility to Acquire Acute Respiratory Diseases

Dr. Aprajita Singh & Mohammed Zahid

ABSTRACT

In the current scenario, Tobacco smoking have become a common threat to human health. Smoking tobacco affects active and passive smoker's lungs differently, which will result in respiratory diseases at different stages of life.

This pandemic has shown us that respiratory health and Tobacco smoking are intricately connected. In this study, we estimate the potential risk of smoking cigarettes in active and passive smokers. In a cohort of 154 active and passive smokers from diverse demographics, we investigated the consequences of tobacco use. In India, between April 2022 and June 2022, we calculated the impact of tobacco use on the active smoking population at 33.6% and the passive smoking population at 66.4%. We discovered a relative relationship between smoking and ARD.

According to data analysis, there is a 28.0% incidence of respiratory disease in the community of smokers who are using tobacco actively (p value 0.05). Additionally, Nicotine is a potential factor in acquiring acute respiratory disease following Coronavirus diseases (p value <0.05). Cigarette smoking is associated with evidence of mild to severe respiratory illness and intake of nicotine in active smokers that causes acute respiratory diseases.

Keywords: ARD (acute respiratory diseases), active smokers, nicotine, passive smokers, and tobacco smoking.

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I. INTRODUCTION

Global evaluation propounded that in the early 21st century respiratory diseases accounts for around 16% of all deaths worldwide [123]. In the year 2017 there were 3.91 million deaths reported due to chronic lung diseases which approximately accounts for 7% of all deaths worldwide[2]. Global estimates suggest that the public health crises due to chronic lung diseases ranged from 97.2 to 112.3 million a year from 1990 to 2017 which portray gradual increase in mortality rate association with respiratory diseases[2]. Impact of chronic respiratory diseases on public health in India increased from 4·5% in 1990 to 6·4% in 2016[3].

According to few studies in year 2016, India alone it reported 32% of the total global population affected with chronic lung disease. Chronic obstructive pulmonary disease (COPD) and asthma falls under the category of common chronic lung disease[4]. Pneumoconiosis, and interstitial lung disease and pulmonary sarcoidosis are other categories. Acute and chronic lung conditions clinical syndromes has been epidemiologically associated with cigarette smoking s5. A number of various etiologic causes like viral infections (HIV), occupational gasses and particles, passive exposure to cigarette smoke, inhaling highly polluted air, genetic predisposition, compromised immunity, poor nutritional status and biomass fuel smoke are in close proximity to severe the respiratory diseases [4]. This pandemic caused devastating effects on the respiratory health of people. Tobacco smoking and respiratory health are intricately connected.

Smoking cigarette increases susceptibility to acquire respiratory infections and epigenetic disorder[5]. Inhibition of defense mechanism of airway epithelium, ciliary activity in upper respiratory tract, and immune cells are closely linked/ associated with smoking cigarette, which directly or indirectly promotes microbial pathogens to house in the lungs[5]. Some reports suggested that there is significant high risk for active and former smokers to get infected by the coronavirus diseases[67]. In this research we aim to

provide information about how smoking cigarettes gradually decreases the respiratory health and makes personnel to acquire respiratory infections[5]. In addition, cessation of cigarette smoking brings lung capacity, maximum oxygen uptake and its ability to eliminate foreign bodies entering until the red ludicrously voluminous air bags of lungs. Respiratory health can be whisk vigorously holds together if a person decides to quit smoking and opening hearts for exuberantly safe life in future.

II. METHODOLOGY

2.1 Data source and analysis

Data for this study was collected from various groups that includes IT sector, students, field workers, and non- workers (unemployed). Based on a history of smoking tobacco these groups where divided into active smokers and passive smokers. Furthermore we subdivided these groups into active smokers/passive smokers in IT sector, students, field workers and unemployed.

For each selection were made to collect required data from IT sectors and students. The final sample consists of 2 groups with 154 participants. A questionnaire were given to all participants of several field from April 2022 to June 2022. To ensure the confidentiality, names of the participants were not included in the questionnaires.

Data for the analyses presented in this report were drawn from a special saturated set of population. These questionnaires were given to these groups of population in which we got approximately 70-90% response. However 66.4% people did not responded to question related to smoking (non-smokers), remaining 33.6% who are active smokers (current smokers).

2.2 Statically analysis

Statistical significance was defined as p value less than or equal to 0.05, using two-tailed tests of hypotheses. Categorical data were analysed by chi-square test. The categorical variables are summarized as frequency and percentage. The chi-square test is used to test the association between two categorical variables. The data analysis is done using SPSS (version 27).

III. RESULTS

In this study, we investigated the association between current smoking and the severity of acute respiratory and COVID-19 illness. Preliminary analysis revealed that 33.6 % of the population are active smokers with few symptoms of breathiness and post COVID complication. Likewise 49.8% of the population are passive smokers with respiratory symptoms and post COVID complication. Thought both active and passive smokers show overlapping in respiratory illness, it was hard to distinguish causative agents in both the groups. Of the 154 participants enrolled in tobacco smoking studies, 39 had mention smoking association and remaining 64 has shown no association to tobacco smoking. Of the included participants, either age or marital status show no significant association to tobacco smoking. Additionally, with active smoking in 39%; there was a significant association between tobacco smoking and respiratory illness with incidence of 28.0% (p value <0.05). Furthermore, active smoking in 22.9% has shown correlation with tobacco smoking and alcohol with incidence of 57.4% (p value <0.05). Analysis show no association between COVID-19 and tobacco smoking. Active smokers show some tolerance when compared to passive smoker. Active smoker or former smokers with smoking history consuming nicotine in 27.0% has shown association, predicating that nicotine could associated with consistent smoking and developing respiratory illness. There is association between nicotine and smoking (p value <0.05).

IV. DISCUSSION

The findings of the aforementioned research show that the prevalence of respiratory disease was assessed using a variety of questionnaire (which is include in (tables 2), (table 3), and (table 4).

Smoking has a harmful impact on a person's general health. Since smoking cigarettes changes the physiology of the lungs, it puts population to

an increased risk of developing lung-related infection. Furthermore, there is possible microbiological infections that increases colonisation of the airway of smokers by the bacterial pathogens with accompanying risk of severe infection is reported by various tobacco smoking patients. Moreover, smoking cigarettes can impair immunity, which raises the probability of contracting an infectious disease. Both active and passive smokers are susceptible to viral infections of the upper and lower respiratory tracts as well as invasive diseases brought on by different bacterial pathogens that, when left untreated and undiagnosed, can result in chronic lung disease[5]. More research is required to provide insight on the pathogens since these viruses penetrate host cells utilizing nicotine receptors [8].

When people starts smoking, it may seem as though their lungs are growing defences against the hazardous chemicals. On hypothetical basis, this might be because lungs generate new mutations that cause them to destroy more dangerous heavy metals (Cr , Pb, Cd, and Ni) than healthy persons, or what is known as "super lungs,"(hypothetical affirmation). Smokers' lungs eventually start to work harder to get rid of pollutants from their body, which makes them loses their natural ability for gas exchange and leads to the emergence of lung illnesses. Smoking appears to be advantageous, but it really does more damage than favorable. Exposure to COVID-19 increased the risk various respiratory disease in a proportional manner. It was claimed that smokers had more severe respiratory symptoms and post-COVID-19 complications.

Additionally, former smokers had more severe respiratory illnesses and post-COVID-19 complications, which put them at the risk for ARS and respiratory failure[9]. Although the 7 subtype of nicotine acetylcholine receptors (7-nAChR) is discreetly linked to coronavirus infection, contemporary smokers who consume nicotine were at risk [10]. A substantial correlation between active smoking and an increased risk of COVID-19 appears to exist.

The fundamental cause of progressively deteriorating immunological and lung function, as well as the possibility for lung cancer development, is chronic exposure to toxicants produced from smoking. Numerous chemical components of cigarettes are strong carcinogens. Additionally, there has been much empirical research on the connection between alcohol dependency and cigarette use. Both have a chance of contracting the illness. Smoking and alcoholism both have high systemic toxicity, thus those who have a history of both conditions run the risk of developing lung and liver cancers, respectively.

V. CONCLUSION

The statistics analysis show that smoking cigarettes has immediate and reversible impacts on both active and passive smokers. This study examines the acute impact of smoking on smokers' respiratory-related issues. Each of the events—pathogen presence, immunological dysfunction, and antibiotic resistance—increases a smoker's predisposition factors for lung infection.

However, irreparable lung injury will make it easier for these viruses to induce further lung damage, which will eventually lead to lung failure.

Furthermore, since smoking increases the risk of respiratory diseases. In conclusion chemical toxicants with consistent smoking and alcohol dependence may help each other to harm the human body as a whole factor. Smoking cigarette increases susceptibility to acquire respiratory infections and leads to ARS (acute respiratory syndrome). Nicotine may be one of the potential factor for acquiring ARS and ARDS Following Coronavirus diseases. Actively smoking population may be more vulnerable than passive smokers to the effects of Tobacco on health. If a smoker decides to stop, their lungs can recover their potential to function as healthy lungs.

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Table 1: Static characteristic of response (n=154)

Parameters of analysis	Categories	Smokers (active smoker)	Non-smoker (passive smoker)	Total sample	P value
Gender	Male	39	64	150	0.2311
	Female	11	34		
	Prefer not to say	1	1		
Marital status	Married	8	15	152	0.390
	Unmarried	36	79		
	In relationship	7	7		

Table 2: Smoking and Health Characteristic of Response (n=154)

Parameters of analysis	Smokers (active smoker)	Smokers (active smoker) Incidence%	Non-smoker (passive smoker)	Non-smoker (passive smoker) Incidence%	Total sample	P value
Breathing difficulty	34	58.6%	89	41.4%	123	0.003
Coughing	35	59.3%	90	40.7%	125	0.004
Performance difficulty	95	35.3%	40	64.7%	135	0.009
Pain/ fullness in chest	36	51.7%	87	48.3%	123	0.037
Headache	37	34.1%	74	65.9%	111	1.000
Clubbing in finger (a) never (b) sometime (c) most of the time	 37 8 4	 34.3% 44.4% 57.1%	 71 10 3	 65.7% 55.6% 42.9%	133	0.328
Swelling in ankles	42	52.9%	98	47.1%	140	0.128
Sleeping difficulty (a) Normal (b) Distorted (c) No change	 27 12 9	 32.5% 38.7% 42.9%	 56 19 12	 67.5% 61.3% 57.1%	135	0.623

Table 3: Smoking and factorial of response (n=154)

	Smokers (active smoker)	Smokers (active smoker) Incidence%	Non-smoker (passive smoker)	Non-smoker (passive smoker) Incidence%	Total sample	P value
Alcohol intake	24	57.4%	81	42.6%	105	<0.001
Nicotine intake	34	65.4%	92	34.6%	126	<0.001

Table 4: Smoking and COVID-19 of response (n=154)

	Smokers (active smoker)	Non-smoker (passive smoker)	Total sample	P value
COVID-19 infection	31	52	83	0.559
Frequency of infection (a) Nil (b) Once (c) Twice (d) Trice	 25 17 5 1	 53 30 8 2	141	0.951

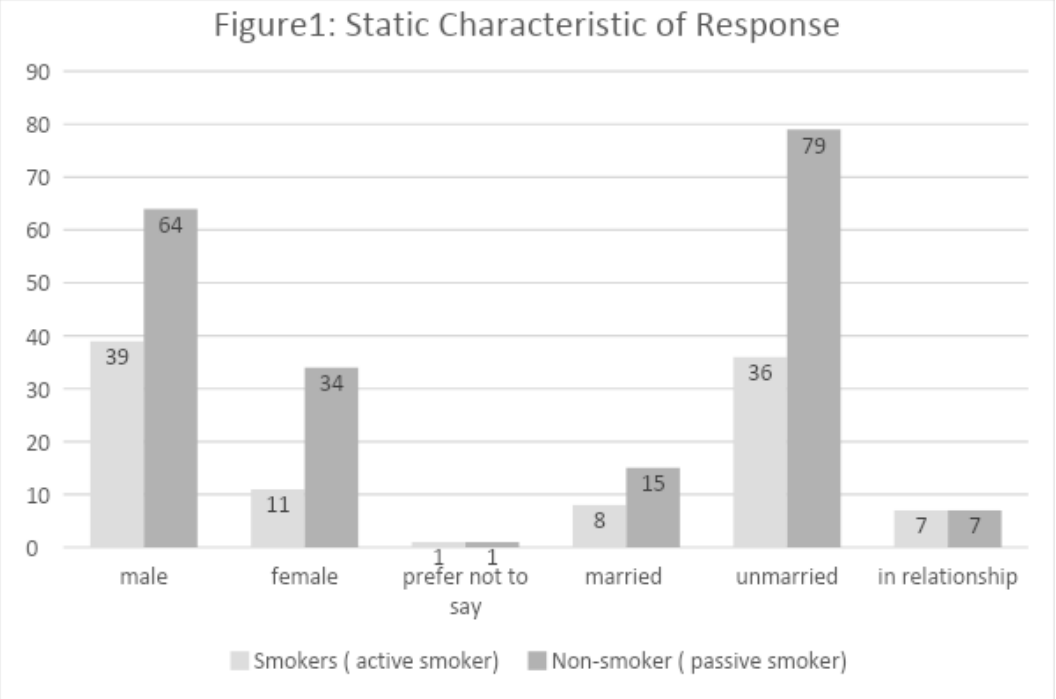

Figure 1: Static Characteristic of Response

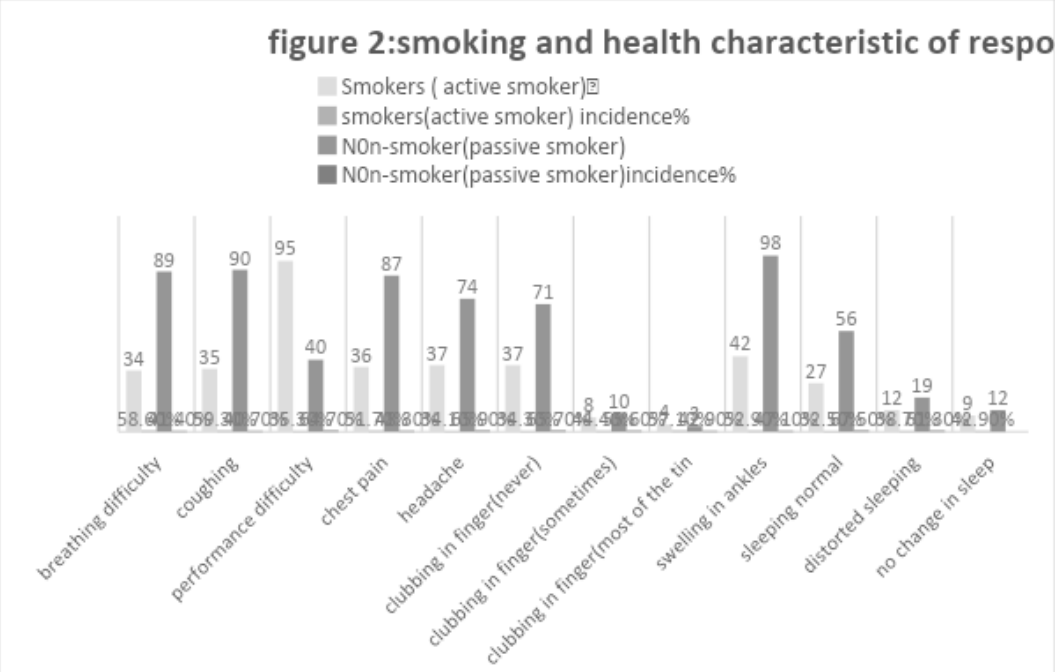

Figure 2: Smoking and health characteristic of respo

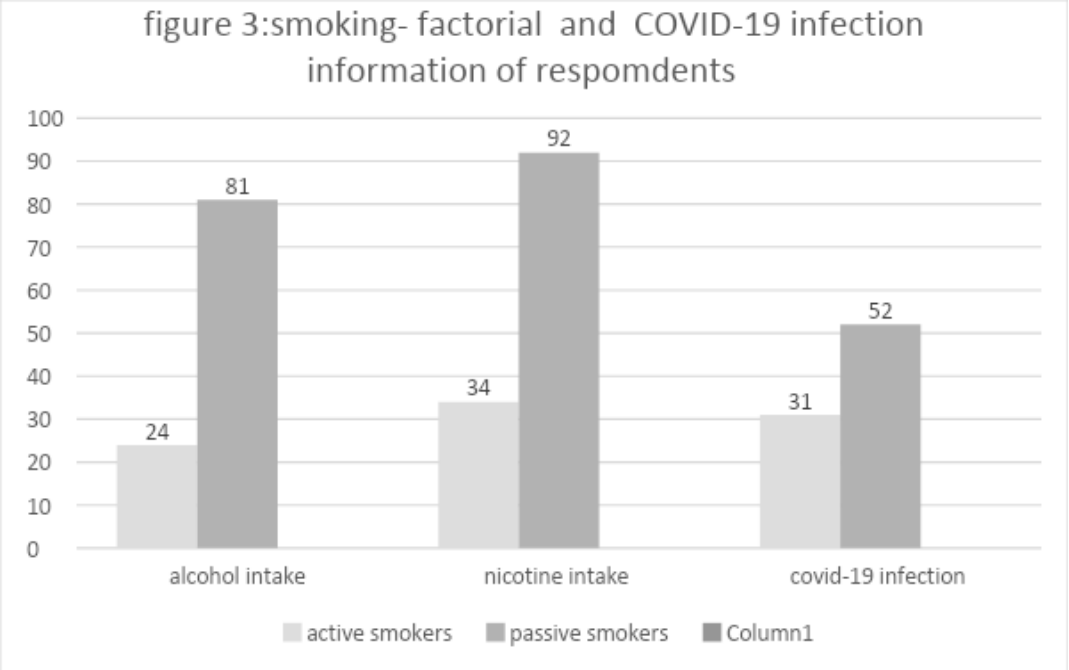

Figure 3: Smoking factorial and COVID - 19 infection information of respondents

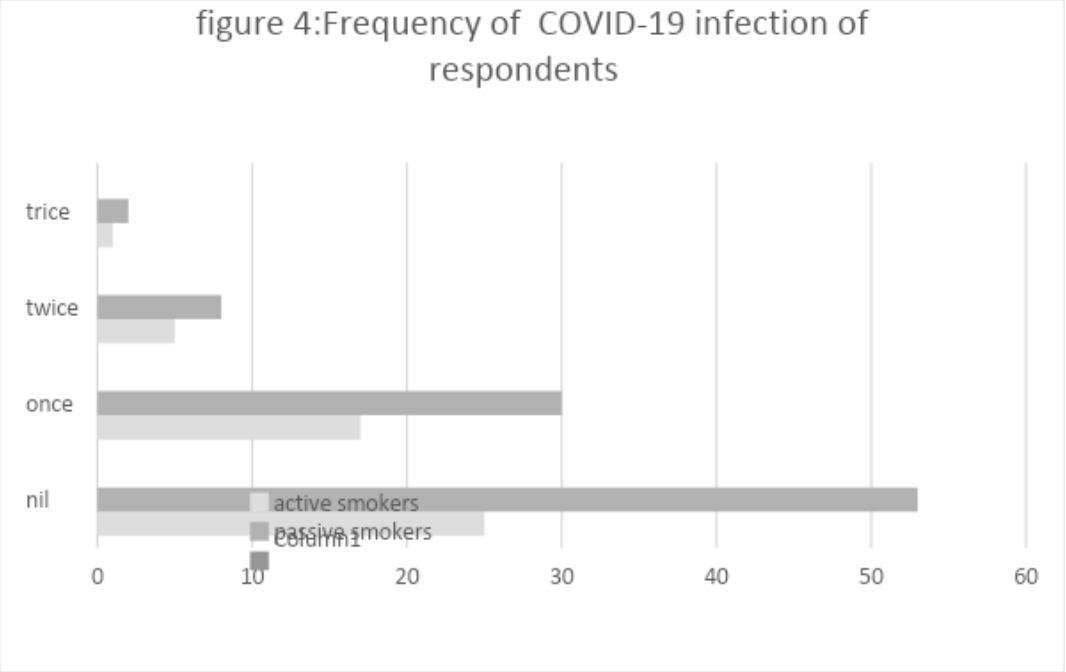

Figure 4: Frequency of COVID - 19 infection respondents

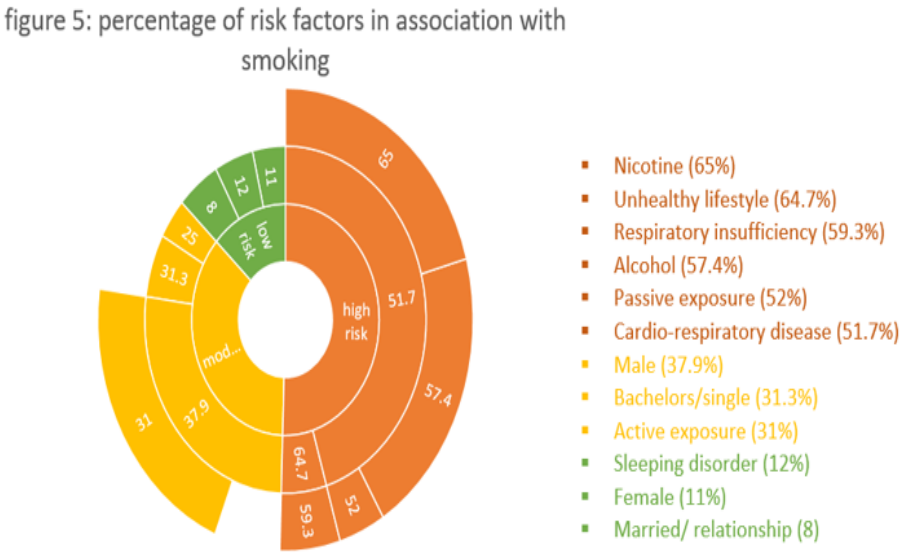

Figure 5 Percentage of risk factors in association with smoking

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