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Knowledge and awareness on hand washing technique and hand hygiene on health care providers

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ABSTRACT

Hand washing is an effective way to avoid the spread of infections. The good hand hygiene involves cleaning the hands in between patients or between examining an infected site and clean body site. The aim of the study is to find out Whether the health care providers are knowledgeable about hand washing techniques and aware of the healthcare-associated diseases. A cross-sectional survey-based study was conducted among 202 health care providers Through the online survey website, Google forms. About 14 questions have been distributed among the health care providers. The results were analysed by SPSS software. The 65.35% of the healthcare providers were aware about the hand hygiene practices, whereas 34.65% were not aware. 57.92% of the healthcare providers were aware of the materials used in hand washing techniques. The Pearson chi-square analysis showed that males are more aware than females on the hand hygiene practices among healthcare providers. This study concludes that the awareness and knowledge of the healthcare providers on the hand washing techniques and hand hygiene are slightly moderate.

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INTRODUCTION

Hand hygiene or cleaning hands using soap and water, antiseptic hand wash, antiseptic hand rub(alcohol-based hand sanitiser) are the surgical based antisepsis. By cleaning hands reduces the spread of deadly germs to patients. Reduce the risk of health care providers from infection caused by germs acquired from patients. Various hand washing techniques are present, followed by healthcare providers. Most healthcare-associated infections(HAI) transmitted by the hand of health care providers(HCPs) direct contact when the hands of heads HCPs transfer microorganisms between individuals or between individual and environmental reservoirs (Ekwere and Okafor, 2013). The hand hygiene liaison committee defines nine controlled research that indicates significant reductions in infection-related outputs in hospitalized patients, even in settings with a high disease incidence (Mathur, 2011). The World health organisation (WHO) gave the 'My five moments for hand washing' to minimise problems related to hand washing. These five moments that call for the use of hand washing include the movement before touching the patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient and after touching the patient surrounding (Jemal, 2018).

The previous articles focus on various hand washing practices among the health care providers performing hand hygiene activities within the health institutions by health care providers with alcohol-based hand rub (ABHR) multiple times causes discomfort. The right technique for the duration of hand washing using soap and water and ABHR are very important to confirm the removal of microorganisms (Engdaw *et al.*, 2019). Previous authors conducted various survey-based studies on the hand washing technique among health care providers. They have given the elaborate explanation for the techniques used by the health care providers in hand hygiene. Handwashing using chemical disinfection of hands accepted as a universal precautionary measure in preventing and limiting the speed of Healthcare-Associated infections (Joshi, 2013).

Previous research on various aspects like nanotechnology (Wu, 2019; Ke, 2019), phytochemistry (Chen, 2019; Li, 2020), pharmacology (Rengasamy, 2016; Shukri, 2016), cancer technology which includes hepatic carcinoma (Jainu *et al.*, 2018), laryngeal cancer (Wang, 2019), oral cancer (Rengasamy *et al.*, 2018; Ramya *et al.*, 2018), and thyroid cancer (Ma, 2019) etc., herbal medicine (Menon *et al.*, 2016), biotechnology (Mohan *et al.*, 2015) as well as biochemical and molecular toxicology (Gan *et al.*, 2019; Ponnulakshmi *et al.*, 2019) were conducted by our team. These epidemiological studies stemmed out for the benefit of our community. The aim of the present study is to find out whether the health care providers are knowledgeable about hand washing technique and awareness of the healthcare-associated diseases and discuss the various hand washing techniques.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among the healthcare providers Of age group to analyse their knowledge and awareness on hand washing technique. Approval was obtained from the institutional review board, Saveetha Dental College. The survey was conducted among 202 health care providers. Simple random sampling was done. Self-administered questionnaires of 14 close-ended questions were prepared and distributed among the health care providers through online survey website google forms. The responses were collected and tabulated in an Excel sheet and analysed, the results were represented in a bar chart. Statistical analysis was done in SPSS software. Chi-Square test was used to analyse and compare the knowledge of the healthcare providers on hand hygiene techniques.

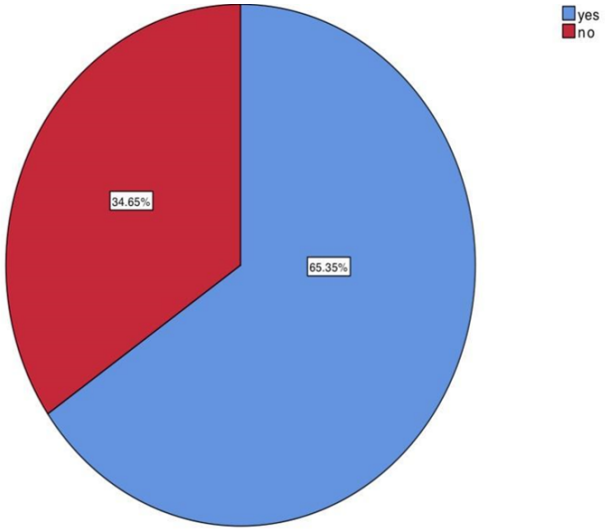

Figure 1: This pie chart represents the percentage distribution of the respondents who are following hand hygiene

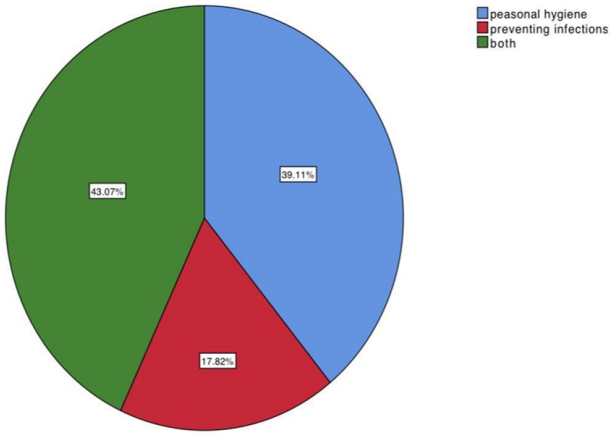

Figure 2: This pie chart represents the percentage distribution of opinion about why hand hygiene practice is important

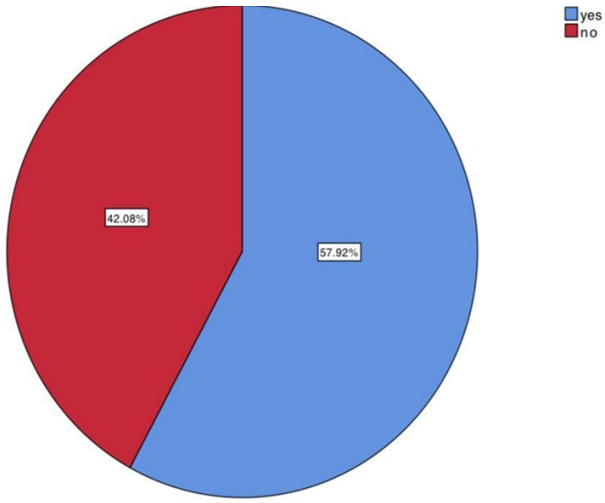

Figure 3: This pie chart represents the percentage distribution of awareness on the materials used in hand washing techniques

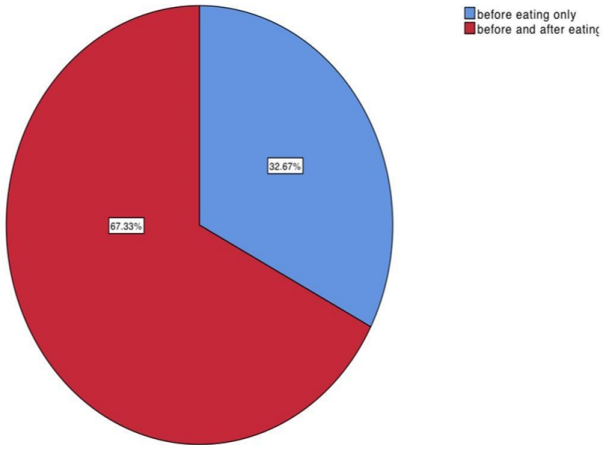

Figure 4: This pie chart represents the percentage distribution of whether the respondents wash their hands before and after eating

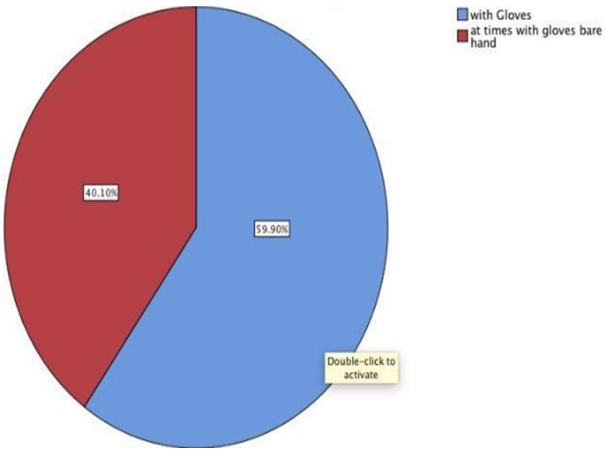

Figure 5: This pie chart represents the percentage distribution of how the respondents examine the patients

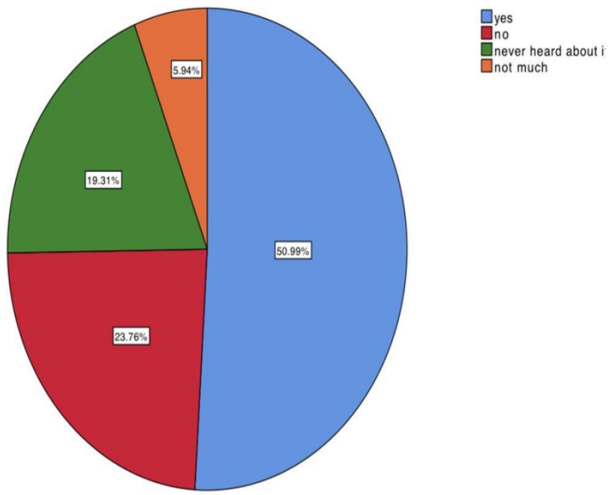

Figure 6: This pie chart represents the percentage distribution of awareness on the correct technique suggested by the world health organization for hand washing

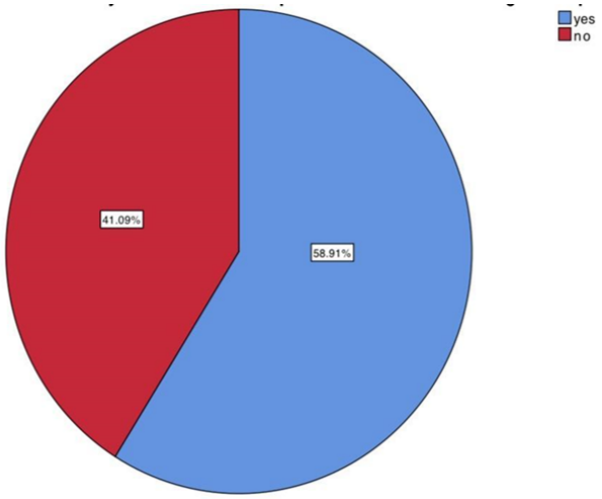

Figure 7: This pie chart represents the percentage distribution of awareness on the steps involved in hand washing technique

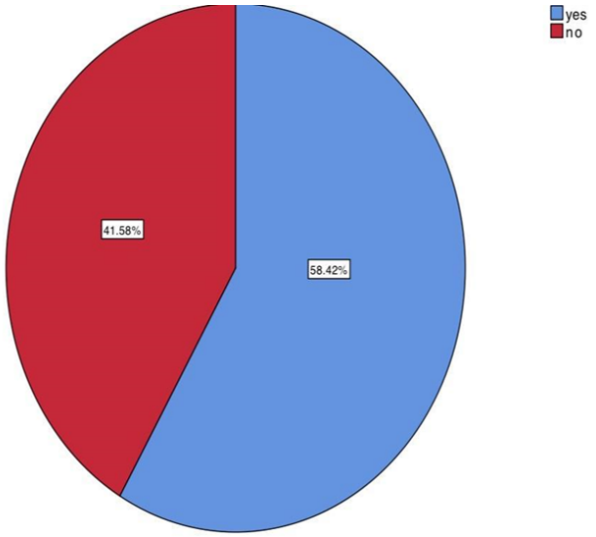

Figure 8: The pie chart represents the percentage distribution of training for hand washing technique

RESULTS AND DISCUSSION

The survey included health care providers from varied age groups and sex. From the people participating in the survey, 67.33% were males and 32.67% were females. When the health care providers were asked about whether they followed the hand hygiene practice, 65.35% responded yes and 34.65% responded no [Figure 1]. When the health care providers were asked about why hand hygiene practices were important 17.82% responded as for preventing diseases, 39.11% responded as personal hygiene and 43.07% responded both are preventing diseases and personal hygiene [Figure 2]. 57.92% of the healthcare providers were aware of the materials used in hand washing techniques [Figure 3].

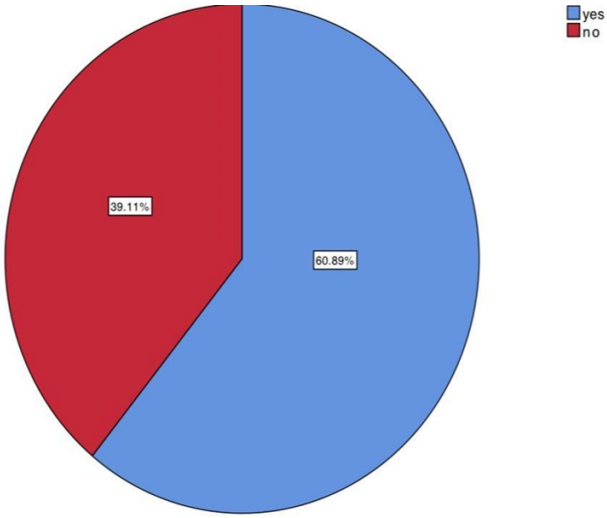

Figure 9: The pie chart represents the percentage distribution of respondents thought as hand hygiene practice an essential part of patient care

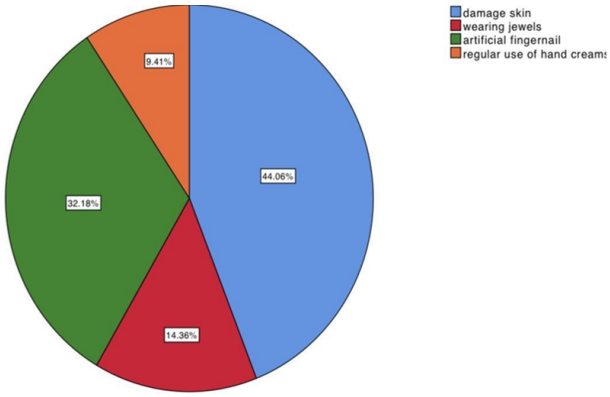

Figure 10: This pie chart represents the percentage distribution of the following should be avoided as associated with increased livelihood of colonization of hands with harmful agents/germs

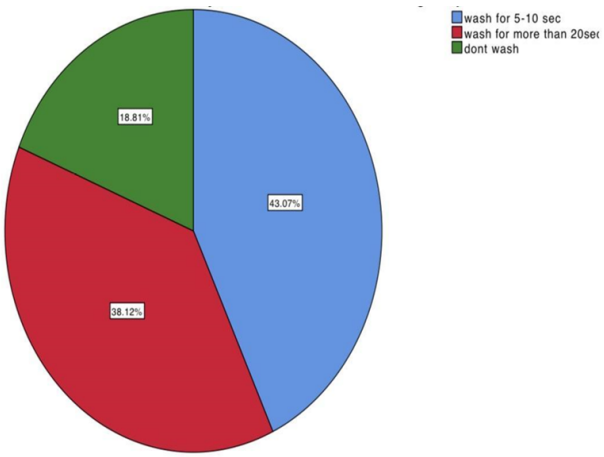

Figure 11: The pie chart represents the percentage distribution of the duration of hand wash after examining the patient by health care providers

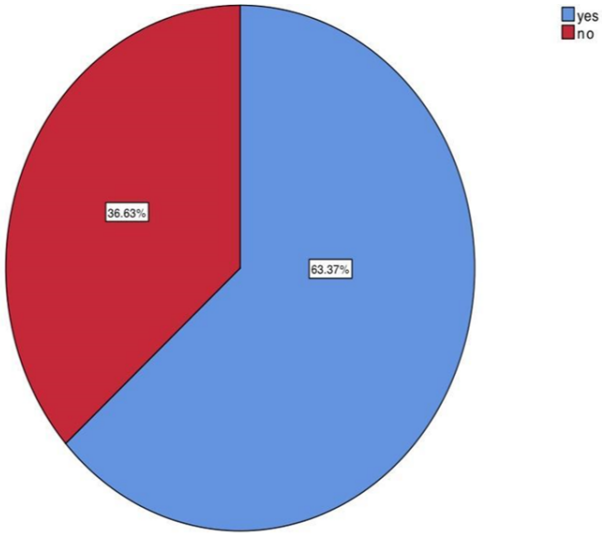

Figure 12: This pie chart represents the percentage distribution of opinion on whether hygiene washing with antiseptic soap/alcohol hand rub is recommended

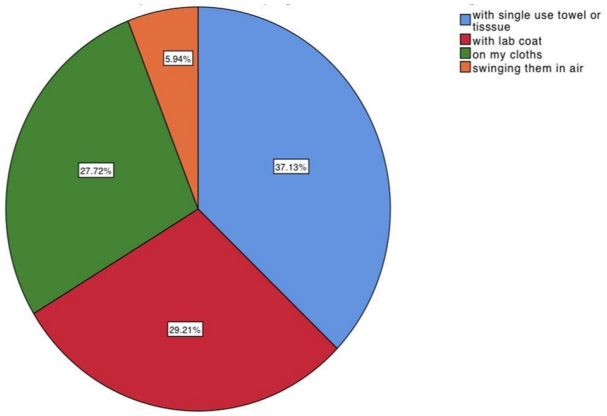

Figure 13: This pie chart represents the percentage distribution of knowledge on the method of wiping hands after hand washing

67.33% wash their hands before and after eating, whereas 32.67% wash before eating only [Figure 4]. 59.90% examined their patients with Gloves, whereas 40.10% responded as they examined the patient at times with Gloves but usually bare handed [Figure 5]. 50.99% were aware of the correct technique suggested by the world health organisation for hand washing, 23.76% were not aware about it and 19.31% responded that they had never heard about it and 5.94% responded not much aware about it [Figure 6]. When the health care providers were asked whether they were aware about the steps involved in hand washing techniques, 58.91% responded that they were aware [Figure 7]. 58.42% of the healthcare providers were trained for the hand washing techniques [Figure 8]. 60.89% responded As hand

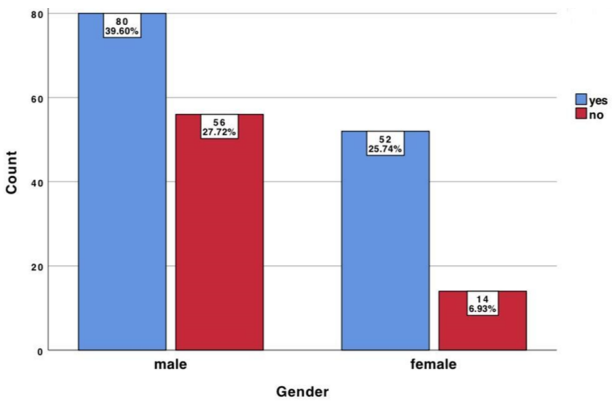

Figure 14: The bar graph represents the association between gender and healthcare providers aware of hygiene practice

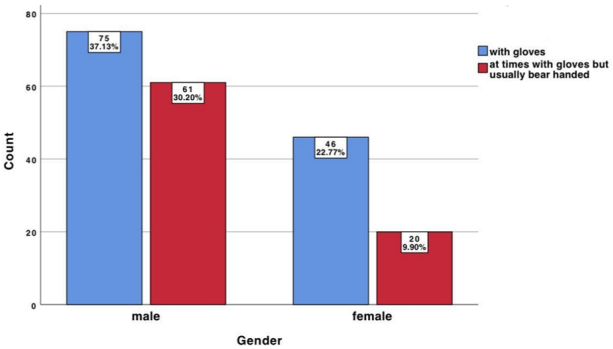

Figure 15: The bar graph represents the association between gender and how health care providers examine their patients

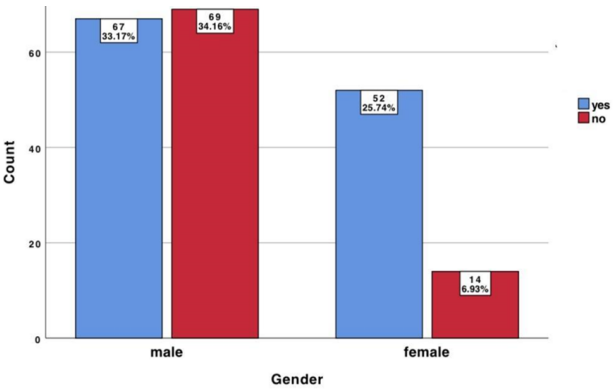

Figure 16: The bar graph represents the association between gender and awareness of the steps involved in hand washing techniques

hygiene practice was an essential part for patient care [Figure 9]. 14.36% responded wearing jewels, 44.06% responded damaged skin, 32.18% responded artificial fingernails and 9.41% responded regular use of hand cream when they were asked about the following steps avoided when associated with the increased livelihood of colonization of hands with harmful agents or germs [Figure 10]. 18.81% don't wash their hands,

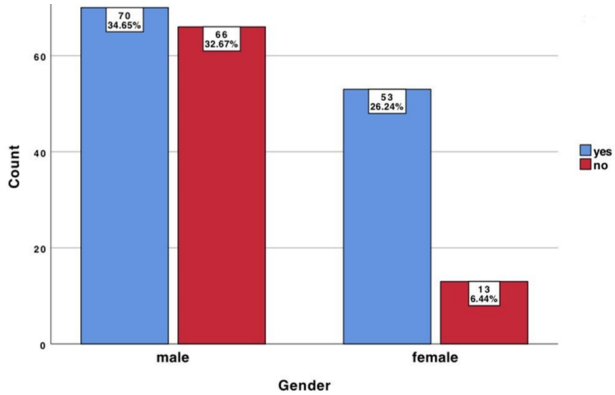

Figure 17: The bar graph represents the association between gender and awareness of hand hygiene practice as an essential part of patient care

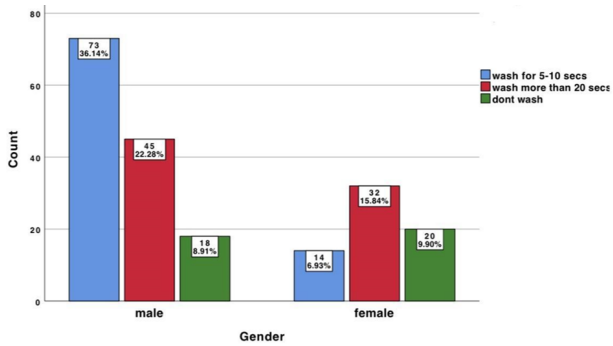

Figure 18: The bar chart represents the association between gender and the duration of hand wash by the healthcare providers

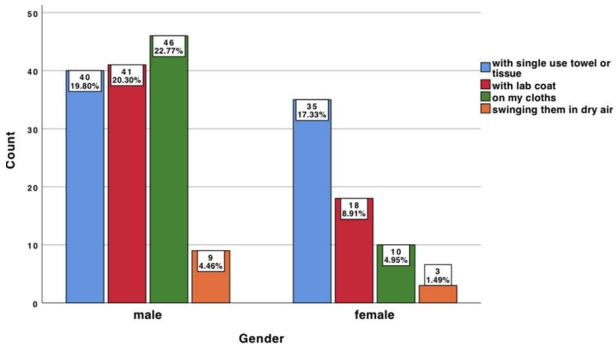

Figure 19: The bar graph represents the correlation between the gender and method of wiping hands after hand wash by the health care providers

43.07% washed for 5 to 10 seconds and 38.12% washed for more than 20 seconds after examining the patients [Figure 11]. Hand washing with antiseptic soap or alcohol hand rub was recommended by 63.37% of healthcare providers [Figure 12]. When the healthcare providers were asked about their method of wiping hands after hand washing, 37.13% responded with a single-use towel/ tissue,29.21% responded with a lab coat, 27.72% used their clothes and the remaining 5.94% swinged them in the air [Figure 13]. The chi-square test was done comparing the gender and the awareness of the healthcare providers on hand hygiene practices where a total of 80 males and 52 females were aware about it [Figure 14]. The chi-square test was done comparing gender and how health care providers examine their patients. Where a total of 73 males and 46 females wear gloves while examining [Figure 15]. The chi-square test was done comparing the gender and awareness of the steps involved in hand washing techniques. Where a total of 67 males and 52 females were aware about it [Figure 16]. The chi-square test was done comparing the gender and healthcare providers awareness as hand hygiene practice is an essential part of patient care. Where a total of 70 males and 53 females were aware about it [Figure 17]. The chi-square test was done comparing the gender and the duration of hand wash by the healthcare providers. Where the majority 73 males wash for 5-10 secs and majority 32 females, wash for more than 20 secs [Figure 18]. The chi-square test was done comparing the gender and method of wiping hands after hand wash by the healthcare providers. Where the majority 46 males of all use their clothes and majority 35 females of all, use a single-use towel/tissue [Figure 19].

In the present study, moderate level correct response and significantly positive correlation were observed among the health care providers. The knowledge and awareness towards hand washing technique and hand hygiene practice showed compliance among healthcare providers. As the awareness systems progressed, healthcare providers were introduced to more hand hygiene procedures. The results were collected and the data analyzed where the moderate level of the health care providers had awareness on hand washing technique. More knowledge and awareness should be incorporated in the primary level and efficiently, a positive report will be observed.

In the present study, 37.13% used single-use towel/tissue and 27.72% used their clothes itself. The similar finding had been found in the study conducted by (Ekwere and Okafor, 2013) where 29.5% used common towels and the remaining 8.6% used their handkerchief and 15.8% used air dry. When the people were asked about the duration of hand wash, In the present study, 43.07% washed hands for 5 to 10 seconds. The similar finding had been recorded in the article by (Jemal, 2018) where 58% responded yes and 22% respondent no for 5 to 10 seconds. When the healthcare providers were asked about their justification for not practicing hand hygiene, In the present study 34.65% wore gloves, 40.10% responded that it's not important in every patient And 25.25% responded that their colleagues don't practise hand hygiene. The similar finding had been recorded in the previous article by (Engdaw *et al.*, 2019) where 53.10% wore their gloves, 86.6% responded that it's not important in every patient and 89% others responded that their colleagues don't practise hand hygiene.

The limitation of the present study was that it included only 202 health care providers and it was not done on a varied population with various age groups. Less sample size was the major limitation of the study. In future, an extensive study with large sample size and varied population would analyse the awareness and knowledge of healthcare providers on hand washing technique and hand hygiene.

CONCLUSION

The present study concluded that the knowledge and awareness on hand washing technique and hand hygiene practices among the health care providers are slightly moderate. The Pearson chi-square analysis showed that males are more aware than females on the hand hygiene practices among healthcare providers. For further argumentation, awareness should be created at the primary level in the initial years of practice of the healthcare providers.

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The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

REFERENCES

Chen, F. 2019. 6-shogaol, an active constiuents of ginger prevents UVB radiation mediated inflam-

mation and oxidative stress through modulating NrF2 signaling in human epidermal keratinocytes (HaCaT cells). *Journal of photochemistry and photobiology*, 197:111518–111518.

Ekwere, T. A., Okafor, I. P. 2013. Hand hygiene knowledge and practices among healthcare providers in a tertiary hospital, south west, Nigeria. *International Journal of Infection Control*, 9(4).

Engdaw, G. T., Gebrehiwot, M., Andualem, Z. 2019. Hand hygiene compliance and associated factors among health care providers in Central Gondar zone public primary hospitals, Northwest Ethiopia. *Antimicrobial Resistance & Infection Control*, 8(1):190–190.

Gan, H., Zhang, Y., Zhou, Q. 2019. Zingerone induced caspase-dependent apoptosis in MCF-7 cells and prevents 7,12-dimethylbenz(a)anthracene-induced mammary carcinogenesis in experimental rats. *Journal of Biochemical and Molecular Toxicology*, 33(10).

Jainu, M., Priya, V. V., Mohan, S. K. 2018. Biochemical evidence for the antitumor potential of Garcinia mangostana Linn. On diethylnitrosamine-induced hepatic carcinoma. *Pharmacognosy Magazine*, 14(54):186–186.

Jemal, S. 2018. Knowledge and Practices of Hand Washing among Health Professionals in Dubti Referral Hospital, Dubti, Afar, Northeast Ethiopia. *Advances in Preventive Medicine*, 2018:1–7.

Joshi, S. K. 2013. Hand washing practice among health care workers in a teaching hospital. *Journal of Nepal Health Research Council*, 11(23):1–5.

Ke, Y. 2019. Photosynthesized gold nanoparticles from Catharanthus roseus induces caspase-mediated apoptosis in cervical cancer cells (HeLa)', Artificial cells, nanomedicine, and biotechnology. 47:1938–1946.

Li, Z. 2020. Apoptotic induction and anti-metastatic activity of eugenol encapsulated chitosan nanopolymer on rat glioma C6 cells via alleviating the MMP signaling pathway. *Journal of photochemistry and photobiology. B, Biology*, 203:111773–111773.

Ma, Y. 2019. Sesame Inhibits Cell Proliferation and Induces Apoptosis through Inhibition of STAT-3 Translocation in Thyroid Cancer Cell Lines (FTC-133). *Biotechnology and Bioprocess Engineering*, pages 646–652.

Mathur, P. 2011. Hand hygiene: back to the basics of infection control. *The Indian journal of medical research*, 134(5):611–620.

Menon, A., Priya, V. V., Gayathri, R. 2016. Preliminary phytochemical analysis and cytotoxicity potential of pineapple extract on oral cancer cell lines. *Asian Journal of Pharmaceutical and Clinical Research*, 9(8):140–143.

Mohan, S. K., Veeraraghavan, V. P., Jainu, M. 2015. Effect of pioglitazone, quercetin and hydroxy citric acid on extracellular matrix components in experimentally induced non-alcoholic steatohepatitis. *Iranian Journal of basic medical sciences*, 18(8):832–836.

Ponnulakshmi, R., Shyamaladevi, B., Vijayalakshmi, P., Selvaraj, J. 2019. In silicoandin vivoanalysis to identify the antidiabetic activity of beta sitosterol in adipose tissue of high fat diet and sucrose induced type-2 diabetic experimental rats. *Toxicology Mechanisms and Methods*, 29(4):276–290.

Ramya, G., Priya, V. V., Gayathri, R. 2018. Cytotoxicity of the strawberry extract on oral cancer cell line'. *Asian J Pharm Clin Res*, 11:353–355.

Rengasamy, G. 2016. Characterization, Partial Purification of Alkaline Protease from Intestinal Waste of Scomberomorus Guttatus and Production of Laundry Detergent with Alkaline Protease Additive. *Indian Journal of Pharmaceutical Education and Research*, (2s):4–4.

Rengasamy, G., Venkataraman, A., Veeraraghavan, V. P. 2018. Cytotoxic and apoptotic potential of Myristica fragrans Houtt. (mace) extract on human oral epidermal carcinoma KB cell lines. *Brazilian Journal of Pharmaceutical Sciences*, 54(3):1–7.

Shukri, N. M. M. 2016. Awareness in childhood obesity. *Research Journal of Pharmacy and Technology*, pages 1658–1658.

Wang, Y. 2019. Synthesis of Zinc oxide nanoparticles from Marsdenia tenacissima inhibits the cell proliferation and induces apoptosis in laryngeal cancer cells (Hep-2). *Journal of photochemistry and photobiology. B, Biology*, 201:111624–111624.

Wu, F. 2019. Biologically synthesized green gold nanoparticles from induce growth-inhibitory effect on melanoma cells (B16)', Artificial cells, nanomedicine, and biotechnology. 47:3297–3305.