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Post Covid-19 Hygienic Behavior and Public Perception in Zanzibar in Relation to Future Pandemic

Salum Seif Salum [a*], Saleh Khalfan Moh'd [a] and Ummulkulthum Chamda Haji [b]

[a] Department of Microbiology and Immunology, School of Health and Medical Sciences, State University of Zanzibar, Tanzania.
[b] Ministry of Health Zanzibar, Tanzania.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: During the COVID-19 Pandemic, hygiene behavior significantly changed due to the implementation of the World Health Organization strategies intended to combat coronavirus transmission. The goal of this study is to assess the post-COVID-19 hygienic behaviors and public perception in Zanzibar.
Methods: This cross-sectional study was conducted in Zanzibar town between March 28 and May 19, 2021. A convenience sampling method was applied to recruit interested participants. A structured questionnaire was used for the interview and a checklist for direct assessment. The data was analyzed using Microsoft Excel and the Statistical Package for Social Sciences (SPSS) Version 20.

**Corresponding author: E-mail: salum.salum@suza.ac.tz;*

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Results: Among 299 enrolled respondents, residents were 78.9% and non-residents were 20.7%. 49.2% of the respondents were between 18 and 28 years old. 53.8% were males and 46.2% females. There was a significant difference in the source of COVID-19 information between residents and non-residents (p-value = 0.0000000000028) p<0.05. Television 61% and radio 34.7% were the main information source for residents as television 76.3% and social media 15% for non-residents. 84.3% of the residents and 58.7% of the non-residents expressed fear of the presence of COVID-19 cases in neighboring countries (p-value = 0.00000741) p<0.05. 59.9% of the residents and 75.4 % of the non-residents believed that Zanzibar was not safe from COVID-19, (p-value = 0.0694) p>0.05. Of 47.5% of respondents believed that the imposition of preventive measures was the main factor that prevented Zanzibar from being strongly hit by COVID-19.
Conclusion: There was positive behavior and perception during post-COVID-19. For sustainable modest hygienic practices, there is a need to shift from fear-driven hygienic behavioral changes to awareness-driven through the use of appropriate sources of information for community education and keep maintaining hand-washing practices at least at public institutions

Keywords: Post-COVID-19; hygienic behaviors; perceptions; residents; non-residents; preventive measures.

1. INTRODUCTION

In early 2020, Coronavirus disease 2019 (COVID-19) was declared as a global pandemic disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS CoV-2), which belongs to the SARS coronavirus (WHO, 2024). The SARS-CoV-2 virus is spreading mainly through respiratory air droplets from infected persons through coughing, sneezing, talking, or even through contaminated hands and objects (Dwipayanti et al., 2021). Since WHO declared COVID-19 as a pandemic, several guidelines have been developed and reliable information on COVID-19 has been uploaded online by WHO and NCDC to help the community dispel ignorance about COVID-19 (Ali et al., 2023). To protect oneself and others from SARS-CoV-2 infections, scientists have agreed on social distancing, hand washing, mask-wearing, and staying at home as key prevention strategies (UNICEF, 2020). Frequent and proper hand washing practice has been shown as the one of the most important measures to prevent infections with the virus (Giné-Garriga et al., 2018). According to the WHO guidelines, effective hand washing with water and cleaning materials needs at least 20s (WHO, 2020). On the other hand, the use of masks as personal respiratory protection has been said to provide the last line of defense in the safety and health controls system (CDC, 2024) by limiting exhaled particles (Nachega et al., 2021).

Community adherence to basic hygiene principles during a pandemic is of great importance (Hassan et al., 2023). Knowledge, attitudes, perception, hygiene practices, and awareness of the mode of disease transmission could play an important role in the prevention and control of pandemic diseases if they are well understood and become a part of habit in the respective community (Erfani et al., 2023).

In 2023, WHO officially declared the end of COVID-19 as a global health emergency. At that moment, worldwide cumulative COVID-19 cases reached 766 million including 7 million deaths (Harris, 2023). In Africa, South Africa, Egypt, Nigeria, Algeria, and Ghana were among the five countries where most cases were reported (Habib et al.,2021). In East Africa, the first country to register a case of COVID-19 was Kenya on March 12, 2020, followed by Rwanda on March 14, 2020, then Tanzania on March 16, 2020, and later Uganda on March 22, 2020, and Burundi on March 31, 2020, respectively (Omondi and Barack, 2021).Despite unilateral decisions made by the East Africa Community member countries jointly to tackle the pandemic, surprisingly some states acted unilaterally (Nasubo et al., 2022).

In Tanzania, a range of protective measures was imposed to mitigate the spread of infection (Rugarabamu et al., 2022). However, three months later Zanzibar started to ease imposed restrictions whereby international flights were resumed and academic institutions (Universities, Colleges, schools) were reopened (Msigwa, 2020). Our previous study revealed that 58.9% of the Zanzibari population was positive for COVID-19 seroprevalence. However, there were no significant differences between Unguja and Pemba islands as well as between rural and urban areas (Salum et al., 2022).

During the COVID-19 pandemic, compliance with hygiene practices was significantly observed, hence understanding how to sustain this practice in the post-pandemic period is of great importance. To our knowledge, the extent to which the COVID-19 pandemic has changed hygiene practices and behavior amongst the Zanzibar general population has not been assessed. Hence, this study is designed to assess the post-COVID-19 hygienic behaviors and public perception in Zanzibar for future pandemic preparedness. Understanding these factors is necessary to improve hygiene promotion for sustained behavior change for better prevention and management of possible pandemics in the future.

2. METHODOLOGY

2.1 Study Sites

The study was carried out in Zanzibar City located in the Urban West Region of Zanzibar. Zanzibar is a part of the United Republic of Tanzania comprising two major Islands Unguja and Pemba, the capital city is Zanzibar City. It has 5 regions, 3 from Unguja and 2 from Pemba. According to the 2022 Population and Housing Census, Zanzibar's population reached 1,893,169 persons (United Republic of Tanzania, 222). It is the busiest city with many administrative offices, academic institutions (universities, colleges, schools) markets, referral hospitals, and air and sea ports with economic activities including business, tourism, fishing, and small industries.

2.2 Study Design and Study Population

This cross-sectional study was conducted in Zanzibar between March 28 and May 19, 2021. A convenience sampling method was used to recruit interested participants. A structured questionnaire was used for the interview and a checklist for direct assessment. The study conducted at Zanzibar town selected sites with heterogeneous populations at Darajani Old market, Airport, seaport, Zanzibar Public Health Emergency Operations Center, and Mnazi Mmoja referral Hospital where residents and nonresidents people from different parts of Zanzibar gathered for different activities. The sample size was calculated by using Fischer's formula (Z2pq)/d2 (Mburu et al., 2023).

2.3 Data Collection

A total of 299 respondents through their consent participated in this survey, Qualitative data was collected using a structured questionnaire constructed in English language and translated into the Swahili language to favor the native participants. The questionnaire was adjusted to capture information on socio-demographic characteristics; knowledge of COVID-19 transmission and prevention measures; attitudes and perceptions toward COVID-19 prevention. The questionnaire was pre-tested to ensure its quality and validity. The checklist was used for assessment for direct evidence of the presence of hygienic practices on Availability of water source /sanitizer, hand wash practices, mask-wearing, and availability of COVID-19 preventive posters. The researchers adhered to COVID-19 preventive public health measures including proper use of face masks.

2.4 Data Analysis

The data from the questionnaire and direct observation was recorded in a Microsoft Excel sheet before analyzed by Descriptive and logistic regression statistics using Statistical Package for Social Sciences (SPSS) version 20. Chi-square was applied to compare resident and non-resident variables. The statistical significance level was set at a P-value of less than 0.05.

3. RESULTS

3.1 Socio-demographic Characteristics

A total of 299 respondents participated in this survey, residents were 236 (78.9%) and Non-residents were 63 (21.1%). The majority of the study population was male 161(53.8%) and female138 (46.2%). The majority of the respondents were at the age of 18 – 28 years which makes 147 (49.2%) of all participants. The middle-aged groups 29-39 years were 75 (25.1%). A total of 42(14.0%) were between the age of 40 - 50 years while the group with the lowest number 35 (11.7%) was 51 years and above.

3.2 Knowledge and Sources of Information about COVID-19

The findings showed that 99.3% of the residents and 100% of non-residents had good knowledge of COVID-19. For the residents, the predominant source of information was television 61%, radio 34.7%, and 2.5% through social media, newspapers, and the Internet. For the non-residents, television was the predominant source of information 76.3%, the radio was 0% but 15% through social media, newspapers, and the

Internet. The results indicated a significant difference in the source of COVID-19 information between residents and non-residents (p-value = 0.00000000000289) p<0.05. More females were reached with information via television than males (101:91) inversely more males were reached with information via radio than female (52: 30) respondents. However, via relatives male and female were the same but via newspapers and internet more males reported as their source of information than females 16:5 respondents. Fig. 1.

3.3 Perception towards COVID-19

3.3.1 Safe belief on the spreading of COVID-19 infection in Zanzibar

Both residents and non-resident respondents were asked about their beliefs on Zanzibar's safety from COVID-19 infection. The findings revealed that 179 (59.9%) of the residents and 75.4 % of the non-residents believed that they were not safe from COVID-19. No significant difference on safe among residents and non-residents believes (p-value = 0.0694) p>0.05.

3.3.2 Fear of COVID-19 in Zanzibar

The participants were asked whether they feared anything about the presence of COVID-19 cases in neighboring countries. The results indicated a significant difference in fear among residents and non-residents (p-value = 0.00000741) p<0.05. The majority of the participants resident 84.3% and 58.7% of non-residents expressed fear on the presence of COVID-19 cases in neighboring Fig. 3.

3.3.3 What prevents Zanzibar from being hit strongly by COVID-19?

The participants were asked about factors that they believed were the reason that COVID-19 did not strongly hit the Zanzibar population. A high number of both residents and non-residents 47.5% believed that imposition of the preventive measures was the main factor that prevented Zanzibar from Covid-19. However, 20.4% is due to religious beliefs, 6.4% to weather conditions, 5.7% to body immunity and 8.4% do not know the factors. Fig. 4.

3.4 Assessment on Practices

Practices toward COVID-19 were assessed at various locations including Mnazi Mmoja Hospital, Darajani market, Malindi seaport, Abeid Amani Karume Airport, and Zanzibar Public Health Emergency Operations Center (a center for COVID-19 check for residents and the Non-residents). Checklist for assessment for direct evidence on the presence of hygienic practices on availability of water source/sanitizer, hand wash practices through water/sanitizer, availability of body temperature check, mask-wearing, and availability of COVID-19 preventive posters. About 87.1% of locations had water source/sanitizer, 40% of the observed population were practicing hand washing/sanitizers, and only 26.5% had body temperature checking, however, only 3% of assessed locations had COVID-19 preventive posters. In wearing face masks, it showed 34% of the observed population wore masks while 66.3% of health workers were wearing the masks Fig. 5.

4. DISCUSSION

This study focused on assessing hygienic behaviors and public perception in Zanzibar Community during COVID-19. To curb the severity and spread of emerging pandemics, it is necessary for the community to adhere to preventive measures (Nachegaet al., 2021). Assessment of disease awareness/knowledge of the populations is a very crucial step for developing disease prevention and control strategies (Erfani et al., 2023). Based on our findings, nearly more than 99% of residents and the non-resident population who participated in this study had good knowledge of the disease. Our findings are in agreement with studies conducted in Tanzania mainland (Rugarabamu et al., 2022) and neighboring countries Kenya (Austrian et al., 2020) and Uganda (Okello et al., 2020) as in other countries like Egypt (Abdelhafiz,2020,Nigeria Olapegba, 2020), Iran (Erfaniet al., 2023) which reported high COVID-19 knowledge among the population but contrary to the findings from two studies from Ethiopia (Haftom et al., 2020, Kebede et al., 2020). Cameroon (Kuhangana et al., 2020) and Democratic Republic of Congo (Umeta et al., 2020), where participants had poor knowledge of COVID-19. Good knowledge of infection control has been reported in previous studies from different countries as a predictor of good practice (Rugarabamu et al., 2022). Thus the high level of COVID-19 knowledge observed in this study might be because the survey was conducted during post COVID-19 era.

Regarding the sources of information about COVID-19, our results indicated a significant difference in the source of COVID-19 information

between residents and non-residents (p-value = 0.00000000000289) p<0.05. The commonest sources of information for the residents were television 61% and radio 34.7%. Social media, newspapers, and the internet make up only 2.5% of the total population. However, for the Non-residents, television was the predominant source of information by 76.3% then radio was 0%. Our findings are in agreement with findings from Uganda and Malaysia whereby the main source of COVID-19-related information was television (Okello et al., 2020, Mohamad et al., 2020). However was contrary to the study from Ethiopia where radio was the main source (Umeta et al., 2022). Perhaps because most of the resident participants were urban residents who are literate and non-residents likely could be attributed to the presence of television English news media programs rather than through radio and other sources.

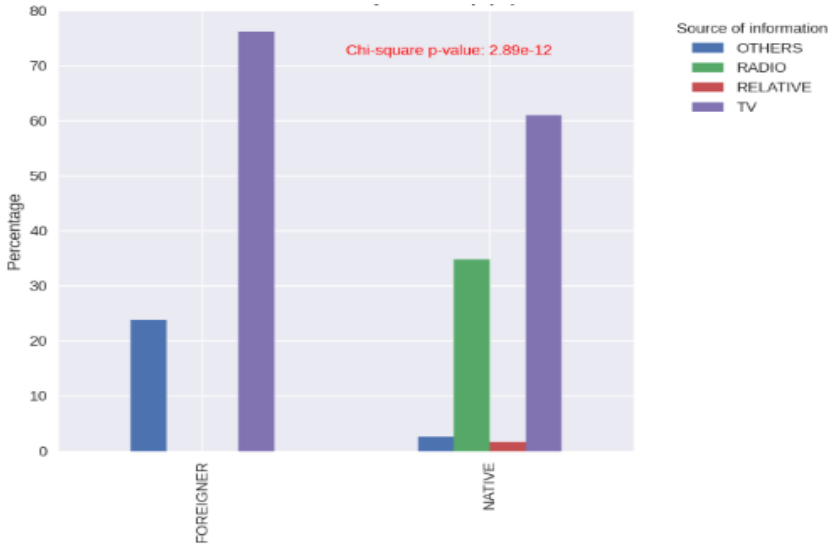

Fig. 1. Sources of information on COVID-19 among residents (native) and non-residents (foreigners)
(p-value = 0.00000000000289) p<0.05

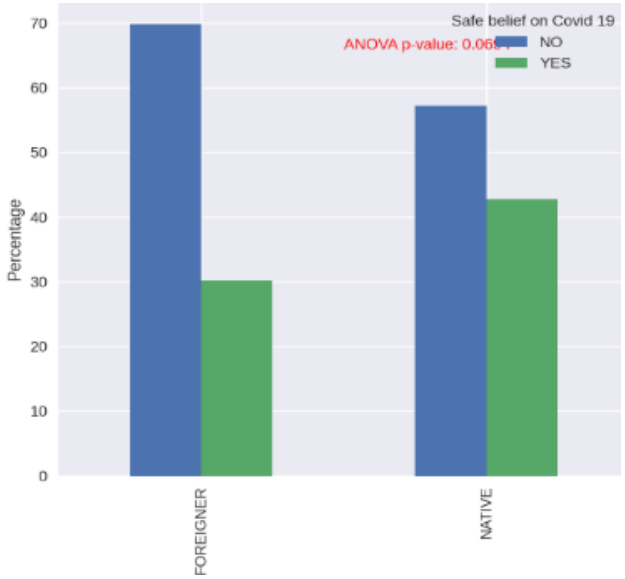

Fig. 2. Safe belief on the spreading of COVID-19 among residents (native) and non-residents (Foreigner)
(p-value = 0.0694) p>0.05

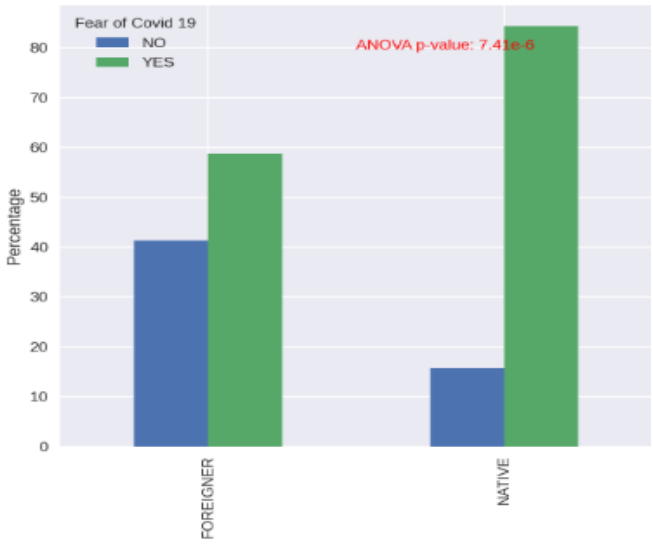

Fig. 3. Fear of COVID-19 among residents (native) and non-residents (Foreigner)
(p-value = 0.00000741) p<0.05

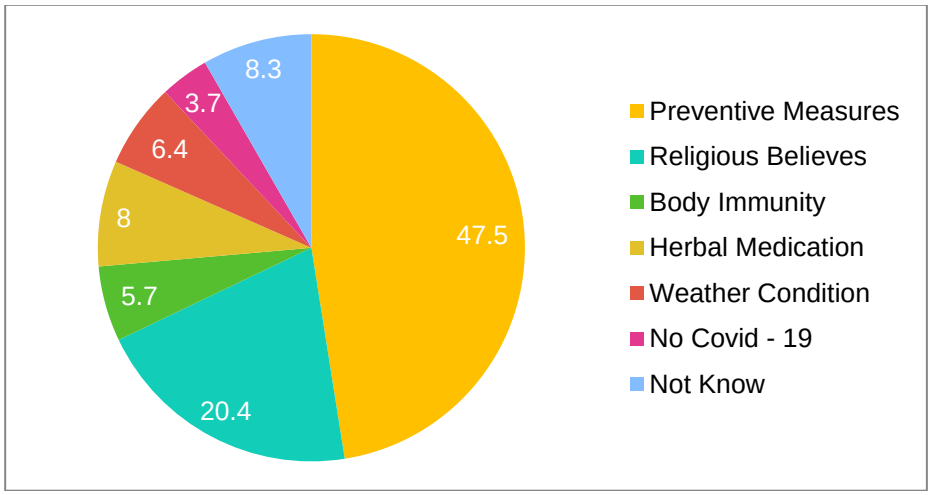

Fig. 4. Perception and beliefs of Participants on the factors that prevent Zanzibar from being strongly hit by COVID–19 [number in percent (%)]

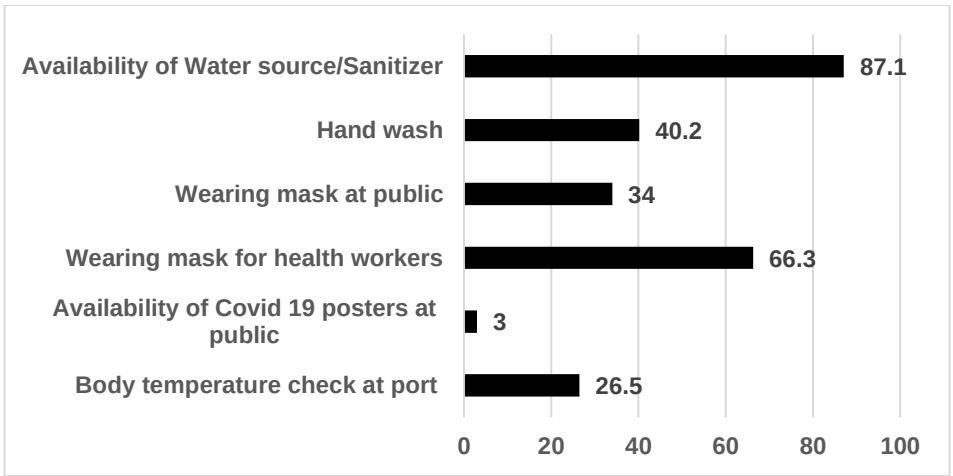

Fig. 5. Attitudes of Participants towards COVID-19 [number in percent (%)

On the other hand, more females were reached with information via television than males (101:91) inversely more males were reached with information via radio than females (52: 30) respondents. Our findings differ from the study conducted in Uganda et.al where more males were reached with information via television than females, but support our study where radio was found to be the most common source of information for males than females (Okello et al., 2020). This result may be possible due to the fact that in Zanzibar more females used to remain at home for longer, so likely to seek health-related information through television than males.

Following the presence of highly reported COVID-19 cases from Tanzania's neighboring countries, our study assessed participant perception towards COVID-19 including safety, fear, and reasons that drives the participant to believe that the COVID-19 infection was not severely hit the Zanzibar community. The findings revealed a high number of the residents 59.9% and 75.4 % of the non-residents believed that Zanzibar was not safe from COVID-19. 47.5% of both residents and Non-residents believed that the imposition of preventive measures was the main factor that prevented Zanzibar from COVID-19. 20.4% of native respondents believed is due to religious beliefs, 6.4% due to weather conditions, 5.7% due to body immunity and 8.4% did not know the reasons. However no significant differences between residents and non-residents on belief of their safetyagaist COVID-19 pandemic (p-value = 0.0694) $p>0.05$. 84.3% of Residents and 78.9% of Non-residents expressed fear of COVID-19. Our findings revealed a significant difference in fear between residents and non-residents (p-value = 0.00000741) $p<0.05$. Previous studies revealed that the source and type of information is the source of fear and panic over COVID-19 (Ahmad and Murad, 2020) that negatively affects the mental health of the community in a dose-dependent manner (Yao, 2020) Mohamad et al emphasized the importance of managing critical information and sustaining public confidence through appropriate use of sources of information in the public (Mohamad et al., 2020). Our findings are strongly supported in various studies on fear of COVID-19 (Quadros et al., 2021, Autenrieth et al., 2024). This finding highlights the influence of information on the population's fears, beliefs and perceptions.

Practices toward COVID-19 were assessed at various locations where about 87.1% of locations had water source/sanitizer, but only 40.2% of persons were practicing hand wash/sanitizers. The hands-washing practices were found to reduce the risk of transmission of contagious and WASH-related diseases (Ali et al., 2023). The significant decrease in post-COVID-19 hand washing practices indicates that the COVID-19 imposed hand washing practices are due to the fear and panic associated with COVID-19 (Ali et al., 2023). On wearing face masks, it showed 44% of observed persons wore masks in public and 66.3% of health workers in working areas. Our study highlighted the impact of COVID-19 on behavioral changes in the community. Our observation is strongly supported by previous studies on the impact of COVID-19 on behavioral changes (Annam et al., 2022, Bertrand et al., 2021). According to the CDC in the hierarchy of safety and health controls, the use of personal respiratory protection has been said to provide the last line of defense as has proven to be an effective barrier to reducing the transmission of respiratory diseases (CDC, 2024). It was reported that discomfort and inconvenience caused by wearing a face mask are the major barriers to compliance with wearing a mask (Ogunsola et al., 2023). A recent study in Ethiopia highlighted that awareness, fear, and panic, are among the major reasons for hygiene behavior changes while the decline in disease transmission, number of deaths, and facility access are among the major reasons for low hygiene practice in the post-COVID-19 (Ali et al., 2023).

Several attributes were reported to show that in the future, the pandemic-imposed changes in hygiene behavior could have positive consequences (Ali et al., 2023). Collectively, this kind of finding can be taken as the first step toward preparedness for the coming pandemic.

Our previous study revealed that 58.9% of the Zanzibari population had positive COVID-19 seroprevalence without significant differences between rural and urban areas (Salum et al., 2020). With increased awareness, regular installation of hand-washing facilities in public and homes subsequently with frequent use of community sources of information for health education could sustainably nurture the modest hygienic practice and make it part of community behavior. A study in Nigeria also pointed out the importance of considering belief systems and perceptions in developing control measures against COVID-19 (Habib et al., 2021). Moreover, the observed positive social, and

cultural community norms and religious teachings in hygiene and good behavior in society during COVID-19, could provide room for the shift of hygiene behavior changes from temporary fear and panic-driven to awareness-driven. Social norms that are supportive of the adoption of hygienic behaviors and practices were found to be very crucial in developing health promotion strategies in the community and particular target groups (Dwipayanti et al., 2021). To the best of our knowledge during COVID -19 there was no comprehensive study conducted in Zanzibar to assess knowledge, attitudes, public perceptions, and hygienic practice.

The limitation of our study is that was only conducted in the Zanzibar urban area the most active and highly community-gathered area for business, tourism, fishing, transport, public, academic and health services, and sports activities without focusing on age, gender, academic, employment and geographical background.

5. CONCLUSION

There was positive behavior and perception during post-COVID-19. For sustainable modest hygienic practices, there is a need to shift from fear-driven hygienic behavioral changes to awareness-driven through the use of appropriate sources of information for community education and keep maintaining hand-washing practices at least at public institutions.

The findings of this study will provide the status of hygienic practices in the community that could be useful for the improvement of preventive measures and the set-up of future pandemic preventive strategies in Zanzibar.

The results of this study contribute to the understanding of sources that are commonly used to obtain COVID-19 information and their relationships with gender, age, cultural, and religious aspects.

The findings of this study can aid public health educators in the strategic use of information platforms and sources to effectively communicate COVID–19–related information.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

CONSENT

It is not applicable.

ETHICAL APPROVAL

Ethical clearance for the study was obtained from the Ethics Committee of Zanzibar Health Research Institute (ZAHREC) with Ref. No ZAHREC/04/ST/FEB/2021/15. Participants were provided informed consent before responding at the time of the survey.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., Ziady, H. H., Alorabi, M., & Ayyad, M. (2020). Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). *Journal of Community Health, 45*(5), 881–890. https://doi.org/10.1007/s10900-020-00827-7

Ahmad, A. R., & Murad, H. R. (2020). The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: Online questionnaire study. *Journal of Medical Internet Research, 22*(5).

Ali, A. S., Yohannes, M. W., & Tesfahun, T. (2023). Hygiene behavior and COVID-19 pandemic: Opportunities of COVID-19-imposed changes in hygiene behavior. *Inquiry (United States), 60*. https://doi.org/XXXXXXX

Annam, S., Fleming, M. F., Gulraiz, A., Zafar, M. T., & Khan, S. (2022). The impact of COVID-19 on the behaviors and attitudes of children and adolescents: A cross-sectional study. *XXXXXX, 14*(9).

Austrian, K., Pinchoff, J., Tidwell, J. B., White, C., Abuya, T., Kangwana, B., et al. (2020).

COVID-19 related knowledge, attitudes, practices, and needs of households in informal settlements in Nairobi, Kenya. *SSRN Electronic Journal*. https://doi.org/XXXXXXX

Autenrieth, L. K., Asselmann, E., Melzig, C. A., & Benke, C. (2024). Fear of COVID-19 predicts increases in anxiety, depressive symptoms, health anxiety, psychosocial distress, and loneliness: Findings from a prospective two-year follow-up study. *Journal of Psychiatric Research, 177*(July), 162–168. https://doi.org/10.1016/j.jpsychires.2024.07.018

Bertrand, L., Shaw, K. A., Ko, J., Deprez, D., Chilibeck, P. D., & Zello, G. A. (2021). The impact of the coronavirus disease 2019 (COVID-19) pandemic on university students' dietary intake, physical activity, and sedentary behavior. *Applied Physiology, Nutrition, and Metabolism, 46*, 265–272.

Centers for Disease Control and Prevention. (2024). Hierarchy of controls. Retrieved from https://www.cdc.gov/niosh/topics/hierarchy/default.html

Dwipayanti, N. M. U., Lubis, D. S., & Harjana, N. P. A. (2021). Public perception and hand hygiene behavior during COVID-19 pandemic in Indonesia. *Frontiers in Public Health, 9*(May), 1–12.

Erfani, A., Shahriarirad, R., Ranjbar, K., Mirahmadizadeh, A., & Moghadami, M. (2023). Knowledge, attitude, and practice toward the novel coronavirus (COVID-19) outbreak: A population-based survey in Iran. *Journal of Health Science Surveillance System, 11*(3), 578–591.

Giné-Garriga, R., Requejo, D., Molina, J. L., & Pérez-Foguet, A. (2018). A novel planning approach for the water, sanitation, and hygiene (WaSH) sector: The use of object-oriented Bayesian networks. *Environmental Modelling & Software, 103*(February), 1–15.

Habib, M. A., Dayyab, F. M., Iliyasu, G., & Habib, A. G. (2021). Knowledge, attitude and practice survey of COVID-19 pandemic in Northern Nigeria. *PLOS ONE, 16*(1), 1–12. https://doi.org/10.1371/journal.pone.0245176

Haftom, M., Petrucka, P., Gemechu, K., Mamo, H., Tsegay, T., Amare, E., et al. (2020). Knowledge, attitudes, and practices towards COVID-19 pandemic among quarantined adults in Tigrai region, Ethiopia. *Infection and Drug Resistance, 13*, 3727–3737.

Harris, E. (2023). WHO declares end of COVID-19 global health emergency. *JAMA, 329*(21), 1817. https://doi.org/XXXXXXX

Hassan, O. E. H., Al-Aghbari, A. A., McGowan, M., Dar Iang, M., Basaleem, H. O., Al-Sakkaf, K. A., et al. (2023). Knowledge, attitudes, and practices toward COVID-19 prevention in Yemen: A community-based cross-sectional study. *Frontiers in Public Health, 11*(July), 1–10.

Kebede, Y., Yitayih, Y., Birhanu, Z., Mekonen, S., & Ambelu, A. (2020). Knowledge, perceptions and preventive practices towards COVID-19 early in the outbreak among Jimma University Medical Center visitors, Southwest Ethiopia. *PLOS ONE, 15*(5), 1–15. https://doi.org/10.1371/journal.pone.0233744

Kuhangana, T. C., Mbayo, C. K., Kitenge, J. P., Ngoy, A. K., Musambo, T. M., Obadia, P. M., et al. (2020). COVID-19 pandemic: Knowledge and attitudes in public markets in the former Katanga province of the Democratic Republic of Congo. *International Journal of Environmental Research and Public Health, 17*(20), 1–16. https://doi.org/XXXXXXX

Mburu, A. N., Laving, A., Macharia, W. M., & Sande, J. (2023). Supplemented material. *BMJ Open Gastroenterology, 10*(1), 2023.

Mohamad, E., Tham, J. S., Ayub, S. H., Hamzah, M. R., Hashim, H., & Azlan, A. A. (2020). Relationship between COVID-19 information sources and attitudes in battling the pandemic among the Malaysian public: Cross-sectional survey study. *Journal of Medical Internet Research, 22*(11), 1–13.

Msigwa, F. M. (2020). COVID-19 pandemic and its implications on education systems in Tanzania. *International Journal of Scientific Research, 9*(August), 1–29.

Nachega, J. B., Atteh, R., Ihekweazu, C., Sam-Agudu, N. A., Adejumo, P., Nsanzimana, S., et al. (2021). Contact tracing and the COVID-19 response in Africa: Best practices, key challenges, and lessons learned from Nigeria, Rwanda, South Africa, and Uganda. *American Journal of Tropical Medicine and Hygiene, 104*(4), 1179–1187.

Nasubo, F. E., Nyakwaka, D., & Kali, M. (2022). East African Community's response to

coronavirus: Old habits die hard. *Journal of Governance and Accountability Studies, 5*(2), 17–29.

Ogunsola, F. T., Ejekam, C. S., Balogun, M., Ugonna, I., Odukoya, O., Oduyebo, O., et al. (2023). Universal use of face masks for the prevention of the spread of COVID-19 in community settings in a southwestern state of Nigeria: Willingness and barriers. *Antimicrobial Resistance and Infection Control, 12*(1), 1–11. https://doi.org/XXXXXXX

Okello, G., Izudi, J., Teguzirigwa, S., Kakinda, A., & Van Hal, G. (2020). Findings of a cross-sectional survey on knowledge, attitudes, and practices about COVID-19 in Uganda: Implications for public health prevention and control measures. *Biomedical Research International, 2020*. https://doi.org/XXXXXXX

Olapegba, P. O. (2020). COVID-19 knowledge and perceptions in Nigeria: A preliminary assessment of novel coronavirus (COVID-19) knowledge and perceptions in Nigeria.

Omondi, B. C., & Munga, B. M. (2021). COVID-19 and border restriction policies: The dilemma of trans-border truck drivers in East Africa. *Journal of Governance and Accountability Studies, 1*(1), 55–67.

Quadros, S., Garg, S., Ranjan, R., & Vijayasarathi, G. (2021). Fear of COVID-19 infection across different cohorts: A scoping review. *XXXXXX, 12*(September).

Rugarabamu, S., Ibrahim, M., & Byanaku, A. (2022). Knowledge, attitudes, and practices (KAP) towards COVID-19: An online cross-sectional survey of Tanzanian residents. *Journal of Community Medicine and Public Health Reports*.

Salum, S. S., Sheikh, M. A., Hebestreit, A., & Kelm, S. (2022). Anti-SARS-CoV-2 seroprevalence in Zanzibar in 2021 before the Omicron wave. *IJID Regions, 4*(June), 120–122.

Umeta, B., Mulugeta, T., Mamo, G., Alemu, S., Berhanu, N., & Milkessa, G. (2022). An analysis of COVID-19 information sources. *Journal of Pharmaceutical Policy and Practice, 15*(1), 1–9. https://doi.org/10.1186/s40545-022-00446-8

UNICEF. (2020). Final evaluation of Afya Bora ya Mama na Mtoto project (2015-2019). Retrieved from https://www.unicef.org/tanzania/reports/final-evaluation-afya-bora-ya-mama-na-mtoto-project-2015-2019

United Republic of Tanzania. (2022). Tanzania population census.

World Health Organization. (2020). Transmission of SARS-CoV-2: Implications for infection prevention precautions. Retrieved from https://www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions

World Health Organization. (n.d.). Severe acute respiratory syndrome. Retrieved October 16, 2024, from https://www.who.int/health-topics/severe-acute-respiratory-syndrome

Yao, H. (2020). The more exposure to media information about COVID-19, the more distressed you will feel. *Brain, Behavior, and Immunity, 87*, 167–169.

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