

The Deaf or Hard of Hearing Population's Attitude and Information Seeking Behaviour Towards COVID-19 in South Africa

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ABSTRACT This study presents an exposé of the information seeking behaviours and patterns and attitudes regarding COVID-19 among a sample of 206 people from the deaf/hard of hearing population (males, n = 119; females, n = 87) in three South African provinces. The researchers designed a Google Form, which was used for the data collection, which took place over seven weeks. The data generated were analysed using both descriptive and inferential statistics. The average age of the respondents was ± 52.5 years, and the findings revealed that the respondents were most curious about preventive measures against COVID-19, possible vaccines and travel advisories. They explored information provided on the Internet, social networking sites and television for COVID-19 related information. The sources of the COVID-19 related information and the type of the COVID-19 related information sought determined the attitudes of the South African deaf/hard of hearing towards this virus. Recommendations were made based on the findings.

INTRODUCTION

The coronavirus disease (COVID-19), which has been declared a pandemic by the World Health Organisation (WHO 2020) has not spared South Africa and her deaf/hard of hearing (D/Hoh) communities. South Africa recorded its first COVID-19 case in KwaZulu-Natal province on March 5, 2020 (Giandhari et al. 2020). Regrettably, despite the lockdown and other proactive measures taken by the government to combat the virus, South Africa records new cases of COVID-19 infection on an almost daily basis.

According to Kalayou et al. (2020), COVID-19 has exposed the human race to a high level of uncertainty and unprecedented threats to overall human interactions and wellbeing. Lamentably, the impact of COVID-19 on interpersonal relationships and the psychosocial wellbeing of persons with disabilities, particularly those who are D/Hoh, could be devastating and demoralising when compared to their non-deaf peers. There is no gainsay-

ing that a lack of reliable and quality COVID-19 and/or other health related information available to the D/Hoh community might further heighten their psychological trauma (Adigun 2017; Adigun and Mngomezulu 2020), which has already been characterised by the loss of their sense of hearing. Hence, in this present time of the COVID-19 pandemic, the need for accurate information on COVID-19 for the D/Hoh is necessary and important. Regrettably, understanding of the information needs, information seeking behaviours and the attitudes towards COVID-19 among the South African D/Hoh are yet to be established.

Objectives of the Study

This study aimed to presents an exposé of the information seeking behaviours/patterns and attitudes towards COVID-19 among some of the South African D/Hoh population. It was specifically designed to:

- 1) Assess what COVID-19 information was sought most by the D/Hoh, and to what extent.
- 2) Investigate sources of information regarding COVID-19 high-risk behaviours that were accessed by the D/Hoh.

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- 3) Understand perceived challenges faced by the D/Hoh when seeking COVID-19 related information.
- 4) Determine the type of COVID-19 information sought, the sources of such information, the challenges faced when seeking such information and the importance attached to the information obtained contribute significantly to the attitudes of the deaf/Hoh towards COVID-19.

Literature Review

Deaf and Deafness in South Africa

Persons who are deaf/hard of hearing (D/Hoh) represent a group of individuals with little or no ability to respond to sound signals through their organs of hearing (Adigun and Nzima 2020). According to Adigun and Nzima (2020), some persons with deafness may have moderate to profound hearing loss that can make their ability to process linguistic information become awfully unattainable. Fundamentally, Adigun (2020) notes that the onset of deafness (pre-lingual or post-lingual) may contribute to the comprehension of linguistic vocabularies through lip reading strategies. Interestingly, the D/Hoh people in South Africa are a recognised community bound together by a distinct cultural and linguistic identity. They largely communicate through sign language, which involves the combinative use and movement of the eyes and hands in space. According to Penn (1993), sign language is the natural language of the D/Hoh community, hence the government of South Africa has officially recognised South African Sign Language (SASL) as a home language.

Despite being an upper middle income country with a rationally advanced health care system (Störbeck and Young 2016), about five percent of South Africans have disability of hearing (Statistics South Africa 2014). Recently, an updated report by the government of the Western Cape Province (2020) stated that about 4 million South Africans are D/Hoh. Individuals who are D/Hoh in South Africa face difficulties in accessing health related information and health care services. Kritzing (2011) avers that due to limitations in comprehension and use of the English language vocabulary, limited use of sign language interpreters, and irregular contact with health care profession-

als, the D/Hoh lack adequate knowledge of various medical terminologies. Regrettably, D/Hoh often miss out on a lot of vital information, which others randomly pick up incidentally within their immediate environment, especially in the current challenging time of life threatening outbreaks of infectious diseases (Oyewumi and Adigun 2013). As such there is the potential that D/Hoh communities in South Africa are missing out on vital COVID-19 related information required for them to avoid infection. There is thus a need to examine the information seeking behaviours/patterns of the South Africans who are D/Hoh during the COVID-19 pandemic. In other words, there is a need to examine how and from where will they get vital COVID-19 related information.

Health Related Information Seeking Behaviours/Patterns: The Past and Present

Information seeking behaviour is regarded as a deliberate act of accessing specific information about a phenomenon, with beliefs and actions, which may inform a change in disposition and perhaps influence knowledge. Amazingly, the need for health related information has increased tremendously over the last three decades due to various viral outbreaks (such as Asian bird flu, acute respiratory syndrome (SARS), Ebola, HIV/AIDS and presently COVID-19), and their unprecedented threats to human wellbeing and psychosocial functioning have been reported widely (Kalayou et al. 2020; Mukherjee and Bawden 2012). Over the past decades there has been a proliferation of studies on the sources of health information, challenges in seeking health related information, the quality of such information and how the information obtained informed people's attitudes and decisions. Regrettably, very little of this research has focused on persons who are D/Hoh in South Africa, especially in this era of COVID-19.

While Haricharan et al. (2013) aver that there is a scarcity of health information research among South African D/Hoh, Chininthorn et al. (2016) report that deaf individuals in South Africa continuously and relentlessly yearn for access to understandable health information and communication. South African D/Hoh explore various options, ranging from mass media, personal interactions with deaf and hard of hearing peers, personal interactions with family members, and online platforms

when accessing health related information. Bat-Chava et al. (2005) and Tamaskar et al. (2000) state that D/Hoh have the potential to receive health information from their communities but they are less likely to receive preventive health information from the mainstream media and health care providers. While COVID-19 continues to ravage the globe, Silva et al. (2020) advocate for the inclusion of the D/Hoh in research endeavours. Unfortunately though, there does not seem to be any research evidence available on the sources of COVID-19 related information available to the deaf.

Groce et al. (2006) in their study on HIV/AIDS among a deaf population in Swaziland revealed that posters, disabled peoples' organisations (DPOs) and television were the three major sources of information available to the Deaf. Groce et al. (2006) noted that prevention issues related to communicable diseases were best disseminated through DPOs, as issues addressed through mass media campaigns were less known within the deaf community. Among Ghanaian D/Hoh, Mprah (2014) found that the main sources of health information available to the deaf were workshops, family planning clinics and centres, places of religious worship, books, mass media and the Internet. In Nigeria, Oyewumi and Adigun (2013) noted that females with hearing loss accessed relevant health information from their school environment, family members, health care workers, books and magazines, television, the Internet, religious institutions, posters/handbills and from non-governmental organisations (NGOs). Furthermore, Oyewumi and Adigun (2013) affirmed that the D/Hoh preferred to access relevant health information from schools, health workers and family members, books and magazines and the Internet, whereas Mprah (2014) reported that deaf people in Ghana preferred to access health related information more from health professionals than from any other source.

Bachman et al. (2006) and Groce et al. (2006) also identified that the D/Hoh placed a high premium on health information derived from health care professionals. However, strikingly few healthcare-based information efforts are available and reaching the deaf community via the required and understandable models. Past studies (Zazove et al. 2009; Kritzinger 2011; Adigun 2020) noted that the D/Hoh experience communication barriers when accessing needed health information. Notably the difficulties in accessing and receiving health infor-

mation are not peculiar to the D/Hoh, because health care providers are also faced with the challenges of effectively and efficiently communicating with the D/Hoh in a health care setting (Bachman et al. 2006; Adigun 2019) when sign language interpreters are not involved. According to Adigun and Mngomezulu (2020), Kritzinger (2011), Tamaskar et al. (2000) and Zazove et al. (2009), health information and communication falls below par in mass media, especially when using the medium of television. Despite the role played by audiovisual media in disseminating health related information, Bosch-Baliarda et al. (2020) and Sharma and Rao (2018) remark that although sign language interpretation is incorporated by some television stations it is yet to be incorporated efficiently, and many television stations do not caption televised programmes effectively for the benefit of the D/Hoh audience. Accessing relevant and up-to-date health related information, particularly in this time of the COVID-19 pandemic, might thus be challenging for deaf/hard of hearing individuals.

Past studies (Steinberg et al. 2006; Arulogun et al. 2013; Oyewumi and Adigun 2013; Ochieng et al. 2019) reported differences in the disposition of the deaf towards health care services, knowledge and disease prevention when health related information was facilitated by a certified sign language interpreter. In other words, sources of health information and perhaps the importance attached to such information may influence the attitude of an individual towards healthy living. Specifically, Arulogun et al. (2013) and Oyewumi and Adigun (2013) aver that access to relevant health information and application of such information voluntarily or habitually may bring about a change in behaviour and disposition towards disease prevention. Regrettably, Adigun and Mngomezulu (2020) and Meador and Zazove (2005) remark that a lack of adequate health communication may remove the focus on the importance of a healthy lifestyle.

As no empirical evidence can be found on the contributions of health information variables to the attitudes of the D/Hoh towards any public health concerns, this study aims to bridge the research gaps identified among the hard to reach deaf/hard of hearing community in South Africa. Based on the foregoing, the following questions were raised:

1. What COVID-19 information was sought most by the D/Hoh, and to what extent?

2. What sources of information regarding COVID-19 high-risk behaviours were accessed by the D/Hoh?
3. What were the challenges perceived by the D/Hoh when seeking COVID-19 related information?
4. Would the type of COVID-19 information sought, the sources of such information, the challenges faced when seeking such information and the importance attached to the information obtained contribute significantly to the attitudes of the Deaf/Hoh towards COVID-19?

MATERIAL AND METHODS

Study Design and Setting

A descriptive research design was used to unravel the COVID-19 information seeking behaviours/patterns and to determine the factors that could influence the attitudes of the deaf towards COVID-19. The study consisted of a South African population of persons who were deaf/hard of hearing. Respondents in this study were limited to those between the ages of 18 and 69 years. The provinces with reported high incidences of COVID-19 at the time of the study were purposively selected for the study. A snowballing sampling method was used to recruit the study respondents. According to Dragan and Isaic-Maniu (2013), the snowball sampling technique is a chain sampling method that allows study participants from 'hidden or hard-to-reach' populations of similar target characteristics to be involved in research activities. The snowball sampling approach employed afforded the researchers an opportunity to access responses from 206 D/Hoh from various locations in South Africa.

Measures

The study is based on the status of COVID-19 in the nine months (June 2020 to February, 2021). Prior to this study, the researchers designed a structured, closed-ended questionnaire tagged 'COVID-19 Related Information Questionnaire' using Google Forms, which was used for the data collection. The designed questionnaire was based on a series of questions derived from existing studies (for instance, those by Ali et al. 2020). The ques-

tionnaire designed was divided into sections A to E.

Section A sought demographic information such as age, province, the onset of deafness, and use of assistive listening devices. It also determined if the respondents had had the need to search for COVID-19 related information in the previous nine months and if so, how often they had searched for this information, among other things. Section B was designed to obtain information from the respondents on what COVID-19 related information they had sought and the extent to which they had sought the information. Section C determined which sources were available and accessed to obtain the information on COVID-19. Sections B and C were designed in a 5-point Likert response format of 1 = Very greatly to 5 = Very slightly. Section D with 5 options of 1 = Very high to 5 = Very low was constructed to examine the challenges faced by the D/Hoh when seeking the COVID-19 related information. Section E was designed in a 4-point Likert scale format ranging from 1 = Strongly agree to 4 = Strongly disagree, and examined the attitudes of the respondents towards COVID-19.

Procedure for Data Gathering and Reliability of the Instrument

The study was approved by the institutional review board of a public university in South Africa and the executives of D/Hoh organisations in KwaZulu-Natal province. Respondents were informed that participation in the study was voluntary. All respondents were guaranteed anonymity and confidentiality of their responses. While the researchers understood the dynamics of the South African population and the variance in home languages, the questionnaire was constructed in the English language. The researchers leveraged the English language being the most prominent and generally used means of verbal communication among South Africans and the means of academic instruction in most South African schools.

To ensure the content validity of the research instrument, the researchers sought the assistance of an academic from the Department of Educational Psychology and Special Education of a public university in South Africa, who vetted and added some inputs on some of the questions on the instrument. A language expert later provided some input on how some of the items were worded. To

further ensure the reliability of the instrument, the questionnaire was pilot-tested among some deaf college students in Oyo State, Nigeria. The inter-rater reliability coefficient of the instrument scale was found reliable with a Cronbach's alpha of 0.82. After confirmation of the validity and reliability of the instrument, the link to the Google Form was sent to some deaf individuals and groups on the WhatsApp social media platform. The link remained active for a period of seven weeks.

Data Analysis

Data gathered using the research instrument were analysed using descriptive and inferential statistics. The descriptive statistics involving frequency counts, simple percentages, means and standard deviations were used to present the results of the demographic information of the respondents and answered research questions one, two and three. Inferential statistics involving multiple regression at a significance level of 0.05 were employed to present answers to research question four.

RESULTS

Analysis of the demographical information of the 206 D/Hoh respondents revealed that respondents from three provinces (Gauteng, $n = 52$; Kwa-Zulu-Natal, $n = 96$; Western Cape, $n = 58$) participated in the study. A total of 119 males and 87 females responded to the closed-ended questionnaire. Respondents were ± 52.5 years old. About 65.1 percent identified themselves as Black, 5.8 percent as White and 20.9 percent as Coloured, while 8.2 percent indicated they were either Asian or Indian. About 71.4 percent of the respondents were aged 18-39 years, while 59 (28.6%) were between the ages of 40 and 69 years. About 44.0 percent of the respondents had at least a high school certificate, while others who accounted for 66.0 percent of the study population had higher education. In terms of onset of deafness, about 41.0 percent indicated that they had prelingual deafness, and only 26.2 percent of the respondents currently used an assistive listening device such as a hearing aid. All respondents indicated that they had sought COVID-19 related information since the announcement of its discovery.

Research Question One: *What COVID-19 information was sought most by the D/Hoh, and to what extent?*

Table 1: Descriptive information of responses on Covid-19 information sought for and extent at which respondents seek for such information

	COVID-19 information sought for					Extent of seeking COVID-19 related information				
	Yes					Very great or greatly				
	18-40 ($n = 147$)	41-69 ($n = 59$)	Overall ($n = 206$)	18-40 ($n = 147$)	41-69 ($n = 59$)	Overall ($n = 206$)	18-40 ($n = 147$)	41-69 ($n = 59$)	Overall ($n = 206$)	Very slightly or slightly
Transmission model	108 (71.5%)	43 (28.5%)	73.3%	39 (70.9%)	16 (29.1%)	26.7%	96 (71.6%)	38 (28.4%)	65.1%	12 (70.6%)
Infection rate	127 (70.6%)	53 (29.4%)	87.4%	20 (76.9%)	6 (23.1%)	12.6%	91 (78.4%)	25 (21.6%)	56.3%	36 (56.3%)
Physical and medical symptoms	109 (65.7%)	57 (34.3%)	63.8%	38 (95.0%)	2 (5.0%)	36.2%	83 (64.3%)	46 (35.7%)	62.6%	26 (70.3%)
Preventive measures	131 (68.9%)	59 (31.1%)	92.2%	16 (100.0%)	9 (15.5%)	7.8%	101 (70.1%)	43 (29.9%)	69.9%	30 (65.2%)
COVID-19 High-risk behaviors	98 (66.2%)	50 (33.8%)	71.8%	49 (84.5%)	9 (15.5%)	28.2%	75 (64.7%)	41 (35.3%)	56.3%	23 (74.2%)
Local remedy for COVID-19	34 (38.6%)	54 (61.4%)	42.7%	113 (95.8%)	5 (4.2%)	57.3%	22 (36.1%)	39 (63.9%)	23.5%	12 (44.4%)
Travel advisories	114 (67.1%)	56 (32.9%)	82.5%	33 (91.7%)	3 (8.3%)	17.5%	67 (63.2%)	39 (39.8%)	51.5%	47 (73.4%)
Vaccines	128 (71.1%)	52 (28.9%)	87.4%	19 (73.1%)	7 (26.9%)	12.6%	81 (65.9%)	42 (34.1%)	59.7%	47 (82.5%)
										10 (17.5%)
										40.3%

Table 1 reveals in percentages the dichotomy of the responses across the age categories (18-39 years, $n=147$; 40-69 years, $n=59$) and the overall responses of the respondents in terms of the COVID-19 related information that was sought and the extent to which the respondents had sourced the COVID-19 related information. Based on the results presented in Table 1, it was shown that 92.2 percent of the respondents were most curious about preventive measures against COVID-19. This was followed by information regarding infection rates and vaccines (87.4%) and travel advisories (82.5%) in the second and third positions. Ranked in fourth, fifth and sixth positions for COVID-19 related information sought by the D/Hoh were travel transmission models (73.3%), high-risk behaviour for COVID-19 transmission and infection (71.8%), and the physical and medical symptoms of the disease (63.8%), respectively. Information regarding local remedies for COVID-19 (42.7%) was least sought by the respondents.

In terms of the extent to which the respondents had sourced COVID-19 related information, respondents had greatly sought out COVID-19 preventive measures (69.9%), transmission models for COVID-19 (65.1%), the physical and medical symptoms of COVID-19 (62.6%), as well as vaccine related information at 59.7 percent. Table 1 further showed that the rate of COVID-19 infections and its high-risk behaviours were sourced by the respondents equally at 56.3 percent. About 76.5 percent of the respondents indicated that they had only slightly sourced information on local remedies for COVID-19.

Research Question Two: *What sources of information regarding COVID-19 high-risk behaviours were accessed by the D/Hoh?*

Table 2 presents the results of the responses regarding the sources of high-risk COVID-19 behaviours available to the D/Hoh. Results in Table 2 show that D/Hoh people largely sourced COVID-19 related information using three major means, that is, social networking sites ($\bar{x}=2.74$), Internet searches ($\bar{x}=2.37$) and television ($\bar{x}=2.28$). Other means by which the D/Hoh sourced COVID-19 related information included participation in signed language interpreted virtual workshops and webinars ($\bar{x}=2.09$), visits to health care facilities ($\bar{x}=1.96$), and consultation with and information provided by families, friends, teachers, colleagues and acquaintances ($\bar{x}=1.83$). According to the results in Table 2, public libraries ($\bar{x}=1.65$) and posters/handbills were the least accessed source for information on COVID-19 and its associated high-risk behaviours.

Research Question Three: *What were the challenges perceived by the D/Hoh when seeking COVID-19 related information?*

As indicated in Table 3, the greatest challenges faced by the respondents when accessing COVID-19 related information were inadequate/irregular signed language interpreted COVID-19 related information ($\bar{x}=2.53$), concerns about the disclosure by people who had been in contact with an infected COVID-19 patient ($\bar{x}=2.33$), and a lack of understandable COVID-19 information or the inability to find the appropriate COVID-19 information being sought ($\bar{x}=1.99$). According to the results in Table 3, the least perceived challenges when

Table 2: Sources of information on Covid-19

Source	Most preferred	Second most preferred	Preferred	Mean ($\bar{x}$)	StD
Visiting the health care workers	96 (46.6)	65 (31.5)	45 (21.9)	1.967	1.109
Watching Television	101 (49.0)	85 (41.3)	20 (9.7)	2.283	1.002
Through Internet searches	104 (50.5)	81 (39.3)	21 (10.2)	2.374	1.287
Asking questions from families, friends, classmates, teachers, colleagues and acquaintances.	98 (47.6)	52 (25.2)	56 (27.2)	1.838	0.949
Through social media sites such as: Facebook, Instagram, Telegram, Twitter.	146 (70.9)	48 (23.3)	12 (5.8)	2.741	0.434
Using information sources available in public libraries	49 (23.8)	50 (24.3)	107 (51.9)	1.648	0.941
Attending sign language interpreted virtual workshops and meetings on COVID-19	93 (45.1)	68 (33.0)	45 (21.9)	2.090	1.378
Posters/Handbills	91 (44.2)	57 (27.7)	58 (28.1)	1.562	1.093

Table 3: Perceived challenges towards seeking COVID-19 related information by the Deaf?

	Very high	High	Moderate	Low	Very low	Mean ($\bar{x}$)	SD
Difficulty in determining the quality of COVID-19 information found.	68 (33.0%)	57 (33.0%)	37 (18.0%)	32 (15.5%)	12 (5.8%)	2.33	1.24
Costs of accessing viable information about COVID-19.	89 (43.2%)	74 (35.9%)	25 (12.1%)	5 (2.4%)	13 (6.3%)	1.93	1.10
Lack of understandable COVID-19 information or inability to find the appropriate COVID-19 information being searched for.	109 (52.9%)	24 (11.7%)	51 (24.8%)	10 (4.9%)	12 (5.8%)	1.99	1.22
Concerns about the disclosure of peoples contact with an infected COVID-19 patients.	82 (39.8%)	81 (39.3%)	18 (8.7%)	19 (9.2%)	6 (2.9%)	1.96	1.06
Lack of access to appropriate, regular and practical Covid-19 related information sources in a sign language.	56 (27.2%)	62 (30.1%)	41 (19.9%)	17 (8.3%)	30 (14.6%)	2.53	1.35

sourcing COVID-19 information among the study respondents were difficulties in determining the quality of the COVID-19 information found ($\bar{x}$ = 1.96) and the cost of accessing viable information about COVID-19 ($\bar{x}$ = 1.93).

Research Question Four: *Would the type of COVID-19 information sought, the sources of such information, the challenges faced when seeking*

such information and the importance attached to the information obtained contribute significantly to the attitudes of the D/Hoh towards COVID-19?

To answer research question four, a multiple regression analysis was conducted to reveal both the joint contributions (Table 4a) and the relative contributions (Table 4b) made by the type of COVID-19 information sought, the sources of such in-

Table 4a: Joint contributions of Covid-19 information sought for; sources of such information, challenges faced at seeking for Covid-19 information and importance attached to the information obtained on attitude of the deaf towards Covid-19

<i>R</i>	<i>R square</i>	<i>Adjusted R square</i>		<i>Std. error of the estimate</i>	
0.630	0.387	0.388		3.372	
<i>Model</i>	<i>Sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>
Regression	1514.092	3	504.697	44.385	.000 ^b
Residual	2296.937	202	11.371		
Total	3811.029	205			

Table 4b: Relative contribution of Covid-19 information sought for; sources of such information, challenges faced at seeking for Covid-19 information and importance attached to the information obtained on attitude of the deaf towards Covid-19

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	β	Std. Error	Beta		
Constant	3.494	1.063		3.286	0.001
Covid-19 information sought for	-0.177	0.060	-0.190	-2.965	0.003
Source of covid-19 information	0.521	0.047	0.736	11.035	0.000
Challenges faced seeking COVID-19 information	-0.090	0.053	-0.101	-1.701	0.091

formation, the challenges faced when seeking such information and the importance attached to the information obtained to the attitudes of the D/Hoh towards COVID-19. Table 4a reveals the prediction of all three independent variables on the dependent variable. That is, the attitude of the D/Hoh towards COVID-19 was jointly influenced by the three predictor variables. The Table also shows a coefficient of multiple correlations (R) of 0.630 and an R square value of 0.388. This means that 38.8 percent of the variance in the attitude of the deaf towards COVID-19 was accounted for by all four predictor variables when taken together. The significance of the composite contribution was tested at $p < 0.05$, using the F-ratio at the degree of freedom ($df = 3/202$). The Table equally indicates that the Analysis of Variance for the regression yielded an F-ratio of 44.385 (significant at 0.05 level). This implied that the type of COVID-19 information sought, the sources of such information, and the challenges faced when seeking the COVID-19 information jointly contributed to the observable attitudes of the South African D/Hoh towards COVID-19.

The results captured in Table 4b reveal the relative contributions of the three independent variables to the dependent variable, expressed as beta weights. Using the standardised regression coefficient to determine the relative contributions of the independent variables to the explanation of the dependent variable, this study, as indicated in Table 4b, reveals that the source of the COVID-19 related information obtained by the respondents ($\beta = 0.736$, $t = 11.035$, $p < 0.05$) was the most potent contributor to the prediction of attitude of the deaf towards COVID-19. This was closely followed by the type of COVID-19 related information sought ($\beta = -0.190$, $t = -2.965$, $p < 0.05$). On the other hand, the challenges faced when seeking COVID-19 related information ($\beta = -0.101$, $t = -1.701$, $p > 0.05$) were found to have an insignificant impact on the respondents' attitudes towards COVID-19. This implied that the attitudes of the South African D/Hoh towards COVID-19 were basically influenced by two factors, that is, the source of the COVID-19 related information and the type of COVID-19 related information sought.

DISCUSSION

Since the news of COVID-19 emanated from China, physical and social interactions of people have not been the same. In fact, the negative ef-

fects of COVID-19 on the emotional, physical and psychosocial wellbeing of people may not easily be erased. As COVID-19 has resulted in mortalities in the tens of thousands (Kalayou et al. 2020) and the numbers keep rising, the need for adequate COVID-19 related information is germane for all citizens and residents in South Africa, irrespective of their hearing acuity. Based on the findings shown in Table 1, the researchers found that D/Hoh were most curious to access COVID-19 related information, particularly information regarding preventive measures against COVID-19, possible vaccines and travel advisories. In other words, D/Hoh to a greater extent searched for COVID-19 preventive measures, its model of transmission, the physical and medical symptoms of COVID-19 and vaccine related information. This finding is in line with reports in the studies of Haricharan et al. (2013) and Chininthorn et al. (2016) who also noted the consciousness and eagerness of D/Hoh regarding accessing and securing relevant health information. Although studies reporting information seeking patterns by individuals with deafness were scarce, other studies (Liu 2020; Roselina et al. 2021) among non-deaf populations had revealed the urgency with which people sourced information on the transmission models of and preventive measures against COVID-19.

In response to research question two, which assessed the sources of information regarding COVID-19 high-risk behaviours available to the D/Hoh, the findings presented in Table 2 showed that social networking sites, Internet searches and television were the major sources of information on COVID-19 available to the D/Hoh. These aforementioned sources of COVID-19 related information were closely followed by the respondents' participation in sign language interpreted virtual workshops and webinars, visits to healthcare facilities, and information received from families, friends, teachers, colleagues and acquaintances. This finding corresponds to reports given in the studies of Groce et al. (2006), Mprah (2014) and Oyewumi et al. (2015). Notably, Groce et al. (2006) affirmed that individuals with deafness accessed more information on HIV/AIDS on the Internet and television, although HIV/AIDS related information on television was not always captioned or delivered in interpreted sign language.

Studies by Mprah (2014) and Oyewumi and Adigun (2013) stated that the Internet provided unrestricted access to health information for deaf people. While the Internet provided a platform for

the use of social networking sites, Oyewumi et al. (2015) noted that the D/Hoh had leveraged the opportunities provided by social networking sites to share information and update themselves about the societal phenomenon of HIV/AIDS. Remarkably, shared information on social networking sites greatly impacted psychological adjustments, quality of life, behavioural changes, personal experiences and affective concerns (Ford and Kaphingst 2009; Liu 2020). However, while Groce et al. (2006) and Mprah (2014) identified health care workers and family members as the major sources of health information in their study, this study found that health care facilities and information from families and friends were not prominent sources of information about COVID-19. The study by Liu (2020) among a non-D/Hoh population showed that family members exchanged COVID-19 related information on the risks of the disease and practicing of protective behaviours against the virus, but the respondents in this study under-rated family members as a source of COVID-19 related information. This was perhaps a result of their reduced social and physical interactions due to the pandemic.

The study further revealed that the greatest challenges faced by the D/Hoh when accessing COVID-19 related information were inadequate/irregular signed language interpretations of COVID-19 related information, as well as concerns about the quality of the COVID-19 information provided to them. Respondents were least concerned about the cost of accessing COVID-19 related information, perhaps via the Internet or paid television. Previous studies earlier established that individuals who were D/Hoh accessed information and communicated better through sign language (Adigun 2019; Ngobeni et al. 2020). Unfortunately, limited delivery of COVID-19 related information via sign language may have further influenced their access to and use of relevant COVID-19 related information geared towards the practice of protective behaviour. Respondents in this study were conscious and somewhat sceptical of the quality of the COVID-19 information, which was being shared through various media. Due to communication difficulties and reduced potential for incidental learning, Zazove et al. (2009) and Adigun (2020) state that challenges when accessing health information by D/Hoh are inevitable for the deaf. Thus, while COVID-19 related information comes from different sources, the ability of the D/Hoh to

untangle and verify the COVID-19 information available is limited. Regrettably, health information and communication in the mass media, especially via the television medium, falls below par (Tamaskar et al. 2000; Zazove et al. 2009).

The researchers found in this study that the type of COVID-19 information sought and perhaps the aggressiveness with which this information was sought, as well as the sources of the information and the challenges faced when seeking such information jointly contributed to the observable attitudes of the South Africa D/Hoh towards COVID-19. The researchers observed that the attitudes of the South African D/Hoh towards COVID-19 were basically influenced by two factors, that is, the source of the COVID-19 related information and the type of COVID-19 related information sought. Although this study failed to assess the direction of the respondents' attitudes towards COVID-19, the findings corresponded with the evidence provided in the studies of Arulogun et al. (2013) and Steinberg et al. (2006). Arulogun et al. (2013) and Oyewumi and Adigun (2013) independently reported that the attitudes of young D/Hoh adults towards reproductive health practices were largely informed by the frequency with which they received sexual and reproductive health information from varied sources. Specifically, Arulogun et al. (2013) remarked that relevant health information obtained by persons with hearing loss and the application of such information could potentially bring about changes in their behaviour and disposition towards disease prevention. Meador and Zazove (2005) and Ochieng et al. (2019) noted that access to relevant and quality health communication could influence the attitudes of persons with disabilities towards potential health challenges, disease prevention and the premium placed on a healthy lifestyle.

CONCLUSION

At this critical time during the COVID-19 pandemic, healthy living and consciousness of all preventive mechanisms against the disease is extremely important. Thus information on a healthy lifestyle and the dynamics associated with the virus should be delivered to all citizens in an equitable manner, in order to allay the anxiety associated with the pandemic. With respect to COVID-19, the study noted that South Africans who were D/Hoh

were most curious about the preventive measures against COVID-19 infection, possible vaccines and travel advisories. Hence, they explored the information opportunities provided by the Internet, social networking sites and television for COVID-19 related information. It was quite interesting that the cost of accessing the COVID-19 related information was not a major concern for the respondents. Rather, inadequate/irregular sign language interpreted COVID-19 related information and the quality of the COVID-19 related information available were raised as concerns. The researchers observed that the source of the COVID-19 related information and the type of COVID-19 related information sought were the factors that informed the attitudes of the South African D/Hoh towards COVID-19.

RECOMMENDATIONS

Therefore, in line with extant literature, which has established that individuals with hearing loss struggle with a variety of communication and language barriers that reduce their opportunities to benefit from health information via mass media such as television, particularly when health care messages are not relayed in sign language, the study recommends improved health literacy for the D/Hoh. Such literacy is highly important, especially during the pandemic. Essentially, there should be a conscious effort to make provision for sign language interpretation of all programmes and events that have to do with relaying information about COVID-19 and other health related matters. It is essential that government sensitise the citizenry about the need to share accurate and up-to-date health related information on social networking sites. Also, all deaf associations and groups should always be targeted/included, as the medium for reaching a larger cluster of D/Hoh individuals for holistic health education and sensitisation. Such endeavours will increase the awareness and knowledge of health issues and concerns, and facilitate real-time responses to questions raised by the D/Hoh populations in South Africa.

LIMITATIONS OF THE STUDY

This study focused on the information seeking behaviour/patterns and attitudes of a sample of the South African D/Hoh population from three

purposively selected provinces. The study failed to examine the contribution of other demographical variables such as age, educational status, gender and/or comorbid conditions on COVID-19 related information-seeking behaviours and attitudes towards the virus. Also, the researchers lacked the ability to establish direct links with the respondents, which would have afforded the opportunity to have in-depth discussions with them. In-depth discussions may have provided a greater amount and more elaborate information, which the closed-ended questions could not provide. Hence, an exploratory study with interviews or focus group discussions is suggested for a future study of the same magnitude. Overall, the study contributed to the existing body of knowledge on the understanding of the health information seeking behaviours of the D/Hoh population during a pandemic.

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