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KNOWLEDGE AND BEHAVIORS OF DEAF PEOPLE IN RELATION TO SEXUALLY TRANSMITTED INFECTIONS

CONHECIMENTO E COMPORTAMENTOS DE PESSOAS SURDAS EM RELAÇÃO ÀS INFECÇÕES SEXUALMENTE TRANSMISSÍVEIS

CONOCIMIENTO Y CONDUCTAS DE PERSONAS SORDAS EN RELACIÓN A LAS INFECCIONES DE TRANSMISIÓN SEXUAL

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Objective: To identify the knowledge and risk behaviors for sexually transmitted infections among deaf people. Method: A cross-sectional study conducted with 110 deaf individuals living in northeastern Paraná, selected by means of the snowball technique. The data were collected by means of a structured instrument and submitted to descriptive and inferential analysis (use of multiple logistic regression). Results: Most of the participants had limited information on the transmission and prevention means for sexually transmitted infections (less than 40% of correct answers in relation to hepatitis, gonorrhea and syphilis; and 20.9% have already had symptoms of some sexually transmitted infection). Nine of the 26 subjects that had casual sexual relationships did not use condoms. Bimodal bilingual people presented more chances of knowing transmission and prevention means for sexually transmitted infections and of indulging in safe sex behaviors. Conclusion: the deaf people under study showed limited knowledge about the transmission and prevention means for sexually transmitted infections, which represents a challenge for health professionals.

Descriptors: Sexually transmitted diseases. Deafness. Communication barriers. Access to information. Knowledge.

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Objetivo: identificar o conhecimento e os comportamentos de risco para infecções sexualmente transmissíveis em pessoas surdas. Método: estudo transversal realizado com 110 pessoas surdas residentes no noroeste do Paraná, selecionadas com a técnica da bola de neve. Os dados foram coletados mediante instrumento estruturado e submetidos à análise estatística descritiva e inferencial (uso de regressão logística múltipla). Resultados: a maioria possuía pouca informação sobre as formas de transmissão e prevenção das infecções sexualmente transmissíveis (menos de 40% de acertos em relação a hepatite, a gonorreia e a sífilis, sendo que 20,9% já teve sintoma de infecção sexualmente transmissível). Nove dos 26 que tiveram relação sexual casual não usaram preservativo. Pessoas bilíngues bimodal apresentaram mais chance de conhecer formas de transmissão e prevenção das infecções sexualmente transmissíveis e ter comportamentos sexuais seguros. Conclusão: os surdos em estudo demonstraram pouco conhecimento sobre as formas de transmissão e prevenção de infecções sexualmente transmissíveis, o que constitui desafio para os profissionais de saúde.

Descritores: Doenças sexualmente transmissíveis. Surdez. Barreiras de comunicação. Acesso à informação. Conhecimento.

Objetivo: identificar los conocimientos y las conductas de riesgo en relación con las infecciones de transmisión sexual en personas sordas. Método: estudio transversal realizado con 110 personas sordas que viven en el noroeste do Paraná, seleccionadas mediante la técnica de la bola de nieve. Los datos se recolectaron mediante un instrumento estructurado y se los sometió a análisis estadístico descriptivo e inferencial (uso de regresión logística múltiple). Resultados: la mayoría poseía escasa información sobre las formas de transmisión y prevención de las infecciones de transmisión sexual (menos de 40% de respuestas correctas con respecto a hepatitis, gonorrea y sífilis, donde el 20,9% ya presentó algún síntoma de una infección de transmisión sexual). Nueve de los 26 participantes que tuvieron relaciones sexuales casuales utilizaron preservativos. Las personas bilingües bimodales presentaron mayor probabilidad de conocer formas de transmisión y prevención de las infecciones de transmisión sexual y de realizar conductas sexuales seguras. Conclusión: las personas sordas incluidas en el estudio demostraron tener escasos conocimientos sobre las formas de transmisión y prevención de infecciones de transmisión sexual, lo que representa un desafío para los profesionales de la salud.

Descriptores: Enfermedades de transmisión sexual. Sordera. Barreras de comunicación. Acceso a la información. Conocimiento.

Introduction

Sexually Transmitted Infections (STIs) represent a severe public health problem due to their high global prevalence. In 2016, the global incidence of curable STIs exceeded 376 million cases, corresponding to more than one million new STI cases recorded per day[1].

In this context, the World Health Assembly adopted global strategies on sexually transmitted infections for the health sectors, which proposes a rapid expansion of health interventions and services to eradicate STIs by 2030, in addition to establishing goals for reducing the incidence of gonorrhea and syphilis in adults[1].

Although avoidable, STIs are responsible for significant morbidity and mortality rates. Thus, it is crucial that their prevention, diagnosis, treatment, surveillance and monitoring are effective[1]. It is noted that it is responsibility of the government to promote health and prevent STIs with equality in the entire population, in addition to encouraging sexually active individuals to undergo screening, with consequent detection and early treatment of STIs[2].

It is the State's duty to meet the health needs of the entire population, which includes people with some type of disability, as well as to avoid barriers that may compromise dissemination of health information. However, in their contacts with health professionals, deaf people often face communication barriers due to the professionals' unpreparedness and the absence of interpreters in health institutions[3]. In Brazil, approximately 9.8 million people (5.1%) have some auditory deficiency (AD)[4] and 2.1 million individuals (1.12%) are deaf[5]. AD is related to hearing loss (HL) to some degree, while a deaf person has a hearing loss greater than 40 decibels (profound or severe) and a differentiated identity by the use of sign language[5].

The Brazilian Sign Language (LIBRAS) was recognized as official in 2002 and Decree No. 9,656/2018 determines that, in public institutions, at least 5% of the workers, officers or employees must be trained to communicate in LIBRAS, in addition to providing access to other resources that enable communication. However, most public institutions neglect this legislation, triggering the emergence of communication barriers that are daily experienced by the deaf population[3].

These communication difficulties experienced by deaf people can limit knowledge about health and reduce opportunities for access to health promotion, disease prevention and treatment actions[6]. In this sense, a number of studies show that deaf people have restricted knowledge about sexual and reproductive health, which negatively interferes with sexual practices and with STI prevention[7-9], rendering them more vulnerable than the general population to the development of preventable health problems[6].

In Brazil, there is verified scarcity of studies related to the sex behaviors of deaf people, and those already conducted normally present very small samples and qualitative approaches. The study with the highest number of participants was conducted in Ribeirão Preto with 88 deaf individuals, and its focus was limited to viral hepatitis[10]. Given this context, the following question emerged: Do deaf people have sufficient knowledge to prevent STIs? In order to answer this question, the study objective was to identify the knowledge and risk behaviors for STIs among deaf people.

Method

A cross-sectional study conducted with deaf people living in municipalities that are part of the Main Population Hub (MPH) of the Metropolitan Region of Maringá (MRM), in the northwestern region of the state of Paraná[11]. The *Strengthening the Reporting of Observational studies in Epidemiology* (STROBE) guidelines were taken into account to prepare and describe the study.

The IBGE database provides the number of AD people by town, but not the communication means they employ. In turn, the *e-SUS Atenção Básica* system contains a field to record the presence/type of deficiency; however, the HL degree is not specified in the case of deaf people. Finally, in the municipality under study there is a Deaf People's Association with nearly 420 individuals enrolled, although their contact information cannot be made available.

Thus, the non-probability technique called *snowball sampling* was used to locate and select the participants. According to this technique, people with a given characteristic in common are connected to a social network comprised by links[12]. Thus, hidden or vulnerable people that are difficult to access, such as deaf individuals, are more easily identified by another member of the population than by the researchers[12].

The following criteria were defined for inclusion in the study: being aged at least 18 years old and profound HL in the ear with the best auditory level since childhood. The following exclusion criteria were established: not knowing how to communicate in Libras, having some cognitive disorder (identified in the interaction with the researcher) and not answering more than 10% of the questions in the data collection instrument.

The first people included in the study were identified during the lead author's (a nurse and MSC student in Nursing) intentional participation in a lecture offered at the Deaf People's Association. On this occasion, of the eight individuals present, only two showed interest in participating in the research, and even indicated another five subjects, although not all of them agreed to take part. Given this scenario, it was decided to search for people who, in their *Facebook*® social network profile, identified themselves as deaf and who lived in one of the municipalities under study.

Most of the "seeds" – primary people who indicate new potential participants[13] – were identified from the *Facebook*® social network, that is, those who answered the invitation sent via their *inbox*. In turn, the subjects indicated

were invited in an individualized manner via personal contacts or through a cross-platform communication app: *WhatsApp*®. A video in Libras with the lead author as protagonist was used for the invitations, containing diverse information about the research and the type of participation wanted.

Altogether, 264 deaf people were invited to participate in the study and, of these, 151 did not answer the invitation and/or refused to participate, and three were excluded (two for having a cognitive disorder and one for not fully answering the data collection instrument); therefore, the sample consisted of 110 people. It is believed that the disinterest in taking part of the study derives from the fact that these individuals do not appreciate the theme, as well as for not trusting in hearing people.

All the subjects included were asked to indicate possible participants, until exhausting all the accessible members in the population[13]. For those who agreed, a date, time and locus were defined to conduct the interview, according to the participants' choice. Thus, data collection was carried out in the participants' homes and in more reserved areas of public places, such as in food courts of commercial facilities (supermarkets, shopping malls) and in teaching institutions.

The data were collected from February to August 2019 by the first author – nurse, MSc student in Nursing and with intermediate training in Libras (she attended five extension courses)– by applying an instrument. During data collection, the researcher read and completed the questionnaire and/or stayed close to provide clarifications in Libras on their questions when the participants themselves chose to answer it.

Before initiating the data collection procedure, a pilot study was carried out with ten deaf individuals, in order to verify understanding and adequacy of the instrument and the time to apply it. It was not necessary to implement any changes in the instrument, reason why the pilot study participants comprised the final sample.

The instrument used in data collection was developed by the first two authors based on the questions used in the "Knowledge, attitudes and health practices in the Brazilian population" survey, carried out in 2013 by the Ministry of Health[14]. It consists of 46 questions divided into three parts: the first one contains questions addressing sociodemographic characteristics such as gender, age, schooling, marital status, race, hearing loss degree in the better ear, deaf partner, *per capita* income in minimum wage, orthosis use, and paid work.

The second part consists of 10 questions related to communication and access to health guidelines such as: age when the person started using Libras; use of lip reading; oral communication; understanding television subtitles; perception of communication with the family; bimodal bilingual (communication in two modalities – Libras and Portuguese language); father communicates in Libras; mother communicates in Libras; some family member knows how to communicate in Libras; the family advises on condom use and access to health guidelines.

The third part contains questions from the research conducted by the Ministry of Health referring to the presence of some STIs and knowledge about their transmission and prevention means[14].

The data were double-typed and stored in an *Excel*® spreadsheet and subsequently analyzed in the *SAS (Statistical Analysis Software)* software, version 9.4. The data were described by means of absolute and percentage, simple and bivariate frequencies, and descriptive measures. The knowledge about STIs was determined by the percentage of correct answers to the assertions[14]. The risk factors were investigated by means of the fit of logistic regression models, where the Odds Ratios (ORs) for the different variables were adjusted. "Being a bimodal bilingual person" was considered as the independent variable. The variables to be used as outcome were chosen based on the Chi-square (χ^2) association tests and on Fisher's Exact test. The *Kolmogorov-Smirnov* test indicated that the numerical variables did not present normal distribution; consequently, they were described as median and interquartile range.

The study was approved by the Permanent Committee of Ethics in Research with Human Beings of the signatory institution: CAAE No. 98979618.5.0000.0104). All the participants signed two copies of the Free and Informed Consent Form (FICF).

Results

All 110 study participants were aged between 18 and 73 years old (median of 32.0 with Interquartile Range = 26.7 – 32.0), slightly more than half were female (51.8%) and had profound HL (56.4%). Most of them were white-skinned (62.7%) and were active the labor market (69.1%), with per capita incomes greater than half a minimum wage (84.5%), and with a partner (70.0%) who, in 61.7% of the cases, was also deaf. Less than half (45.5%) had Complete High School, 30.9% made use of hearing aids, and only 1.8% had cochlear implants. The age median when the deafness diagnosis was established was one year old (Interquartile Range = 1.5 – 2.0). The median age for starting to communicate in Libras was nine years old (Interquartile Range = 4 – 14).

Referring to family communication, 41.3% considers it good, 31.2% think that it is fair/poor/awful, and 27.5% rates it as excellent. Most of the participants reported that another family member can communicate in Libras, with 44.9% stating that it is their mother and 18.3%, their father. Only 16.5% of the participants indicted that they understand television subtitles, almost half (46.4%) can do lip reading, 34.5% have oral communication and 30.9% are bimodal bilingual, that is, they communicate in Libras and in oral language.

It was observed that deaf people who use orthoses are 81.3% (OR=5.35) more likely (p=0.0002) to be bimodal bilingual and that they are nearly seven times more likely (p=0.0025) to be active in the labor market than those who are not bimodal bilingual (Table 1).

Table 1 – Logistic regression of the significant variables for bimodal bilingual deaf people living in the Metropolitan Region of Maringá, Paraná, Brazil - 2019. (N=110)

Bimodal bilingual	Yes		No		OR	p-value	CI 95%
	n	%	n	%			
Orthosis use							
No	14	41.18	60	78.95	1	-	-
Yes	20	58.82	16	21.05	5.35	0.0002	[2.227 ; 12.820]
Works							
No	3	8.82	31	40.79	1	-	-
Yes	31	91.18	45	59.21	7.14	0.0025	[2,000 ; 26.641]

Source: The authors.

When asked about family guidance in relation to condom use, more than half (53.2%) asserted that no family member offered this type of guidance, a fact that did not present any significant association (p-value=0.6705) with the fact that some family member knows how to communicate in Libras. It is noted that 44.9% of the deaf people reported not having access to health guidelines, and no significant association (p-value=0.0778) was verified between being bimodal bilingual and having access to health guidelines (data not shown in the table).

The vast majority (93.6%) of the deaf people under study had already initiated their sexual life, with their first relationship when they were between 12 and 33 years old (median of 18.0 with Interquartile Range = 15.0 – 20.5), even before the age of 15 for 15.5% of them. Table 2 shows more information about sexual behaviors, where it can be observed, for example, that 38.8% did not use a condom in their first sexual intercourse, 27.2% only had one sexual partner and the same proportion had more than 10 partners; 19.4% did not have sexual intercourse in the last year, the majority did not use a condom in their last

relationship (63.1%), and that they do not do so with steady partners (73.8%). The fact that 25.2% mentioned casual sex during the last year draws the attention, although most of them (65.4%) had used condoms during the sexual act (Table 2).

Table 2 – General characteristics of the sexual habits and behaviors of deaf people living in municipalities from the Main Population Hub (MPH) of the Metropolitan Region of Maringá (MRM). Maringá, Paraná, Brazil - 2019. (N=103)

Variables		Yes n (%)	No n (%)
Obtained free condoms during the last year		41 (37.6)	69 (62.4)
Used a condom in the first intercourse*		63 (61.2)	40 (38.8)
Had more than one sex partner in life*		75 (72.8)	28 (27.2)
Had more than ten sex partners in life*		28 (27.2)	75 (72.8)
Sex during the last year*		83 (80.6)	20 (19.4)
Used a condom in the last intercourse*		38 (36.9)	65 (63.1)
Always uses condoms with a steady partner*		27 (26.2)	76 (73.8)
Had casual sex encounters during the last year*		26 (25.2)	77 (74.8)
Had more than five casual sex encounters during the last year**		8 (30.7)	18 (69.3)
Uses condoms in casual sex encounters**		17 (65.4)	9 (34.6)
Forgot to use a condom for having drunk alcohol or used drugs**		19 (73.1)	7 (26.9)

Source: The authors.

Notes: * n=103 - Seven individuals have never had sexual relations; ** 26 individuals mentioned casual sex encounters

More than half of the deaf people included in the study (54.5%) were not aware of the rapid test for STI identification and most of them (69.1%) had never done it. However, 20.9% of them mentioned already having had some STI sign or symptom. Table 3 presents the signs and symptoms mentioned.

Table 3 – Signs and symptoms of sexually transmitted infections ever found in the life of deaf people living in the Metropolitan Region of Maringá. Maringá, Paraná, Brazil - 2019. (N=110)

Variables	Prevalence of signs and symptoms	
	n	%
Discharge with STI characteristics	10	9.1
Wounds on vagina or penis	7	6.4
Blisters on vagina or penis	5	4.5
Warts on vagina or penis	9	8.2
At least one STI symptom	23	20.9

Source: The authors.

In relation to knowledge about the transmission and prevention means for STIs, Table 4 shows that the highest percentages of errors were in relation to hepatitis, gonorrhea and syphilis. However, 77% of the participants do not agree with the assertion indicating that "HIV is not transmitted by sharing drinking glasses".

Table 4 – Distribution of the deaf people living in municipalities from the Metropolitan Region of Maringá (MRM) in relation to knowledge about the transmission and prevention means for sexually transmitted infections . Maringá, Paraná, Brazil - 2019. (N=110)

Assertions	Agreement
	n (%)
AIDS has no cure	85 (77.3)
A person cannot catch HIV in the bathroom	81 (73.6)
Condom use prevents HIV contagion	79 (71.8)
A person can catch HIV by sharing needles	63 (57.3)
A healthy-looking person can have HIV	57 (51.8)
Having a faithful and uninfected partner reduces the HIV transmission risks	57 (51.8)
Treatment during pregnancy in a woman with AIDS reduces the risk of her child being born with the disease	51 (46.4)
A person cannot be infected by any STI in a public toilet	46 (41.8)
Condom use prevents syphilis contagion	41 (37.3)
Condom use prevents gonorrhea contagion	33 (30.0)
Syphilis has a cure	28 (25.5)
A person can catch syphilis by sharing needles	27 (24.5)
Gonorrhea has a cure	25 (22.7)
HIV is not transmitted by sharing drinking glasses	25 (22.7)
Sharing needles can transmit hepatitis	22 (20.0)
Condom use prevents hepatitis contagion	19 (17.3)

Source: The authors.

In relation to sexual behaviors, it is observed that being bilingual bimodal was a protective factor, that is, these individuals proved to have more knowledge about STI contagion and transmission means.

It was observed that Bimodal Bilingual deaf people are 4.29 times (76.70%) more likely (p=0.0026) to know that a person can become infected with HIV by sharing syringes; 3.01 times (66.80%) more likely (p=0.0414) to know that condom use prevents contagion, and 3.01 times (66.80%) more likely (p=0.0414) to know that a healthy person can have HIV (Table 5). It was also evident that there are 60% more chances of knowing that "Condoms prevent gonorrhea "and that "Syphilis has a cure", in addition to attending "Routine consultations". Bimodal bilingual deaf people also practiced "Casual sex in the last 12 months" 4.39 more times (77.20%) (p=0.0026) than their bimodal non-bilingual counterparts. Finally, bimodal bilinguals have more than 70% chances of knowing that "Condom use prevents hepatitis" and that "Gonorrhea has a cure" as well as of using a condom in the first sexual intercourse (Table 5).

Table 5 – Logistic regression of the significant variables of knowledge and risk behaviors on sexually transmitted infections for bimodal bilingual deaf living in the Metropolitan Region of Maringá (MRM). Maringá, Paraná, Brazil - 2019. (N=110)

(continued)

Bimodal bilingual	Yes		No		OR	1/OR	CI 95%	p-value
	n	%	n	%				
Catches HIV through a syringe								
Yes	27	42.86	7	57.14	1	-	-	-
No	36	57.14	40	42.86	0.233	4.29	[0.091 ; 0.601]	0.0026*
Condoms prevent HIV								
Yes	29	36.71	5	16.13	1	-	-	
No	50	63.29	26	83.87	0.332	3.01	[0.115 ; 0.958]	0.0414*
Condoms prevent hepatitis								
Yes	11	57.89	23	25.27	1	-	-	-
No	8	42.11	68	74.73	0.246	4.07	[0.088 ; 0.686]	0.0074*

Table 5 – Logistic regression of the significant variables of knowledge and risk behaviors on sexually transmitted infections for bimodal bilingual deaf living in the Metropolitan Region of Maringá (MRM). Maringá, Paraná, Brazil - 2019. (N=110) (conclusion)

Bimodal bilingual	Yes		No		OR	1/OR	CI 95%	p-value
	n	%	n	%				
Condoms prevent gonorrhea								
Yes	15	45.45	19	24.68	1	-	-	-
No	18	54.55	58	75.32	0.393	2.54	[0.167 ; 0.928]	0.0331*
Syphilis has a cure								
Yes	13	46.43	21	25.61	1	-	-	-
No	15	53.57	61	74.39	0.397	2.52	[0.163 ; 0.970]	0.0427*
Gonorrhea has a cure								
Yes	14	56.00	20	23.53	1	-	-	-
No	11	44.00	65	76.47	0.242	4.13	[0.095 ; 0.616]	0.0029*
A healthy person can have HIV								
Yes	26	45.61	8	15.09	1	-	-	-
No	31	54.39	45	84.91	0.212	4.72	[0.085 ; 0.529]	0.0009*
Used a condom in the first intercourse								
Yes	25	39.68	6	15.00	1	-	-	-
No	38	60.32	34	85.00	0.268	3.73	[0.098 ; 0.732]	0.0102*
Casual sex in the last 12 months								
Yes	28	36.36	3	11.54	1	-	-	-
No	49	63.64	23	88.46	0.228	4.39	[0.063 ; 0.829]	0.0248*
Attends routine consultations								
Yes	15	46.88	19	24.68	1	-	-	-
No	17	53.13	58	75.32	0.371	2.70	[0.156 ; 0.883]	0.0250*

Source: The authors.

Discussion

The sociodemographic characteristics of the deaf people included in this study are similar to those of the participants in a study conducted with 282 deaf individuals in Rochester, New York, only differing in relation to schooling, as there was predominance of subjects with Higher Education in the latter survey and of people with High School in the current one[15].

In Brazil, the inclusion of people with disabilities (PWDs) in the labor market is assured by law. This should be proportional to the number of employees, as follows: up to 200: 2%; from 201 to 500: 3%; from 501 to 1,000: 4%; and from 1,001 onward: 5%[16]. In this study, it was found that most of those who had a paid job were bimodal bilinguals; this scenario was probably due to the fact that most of the hearing population did not know how to communicate in sign language[17], which can influence the companies' selection and hiring processes. Thus, deaf people who have limitations, particularities and their own cultural identity have more difficulties to be incorporated into society's everyday activities.

Orthosis use was associated with the fact that the deaf person is bilingual bimodal; however, the hearing improvement varies among people who use them, as this is related to etiological factors of HL[18]. In profound sensorineural HL, hearing aids distort sounds and are not sufficient for the deaf to develop oral communication. In these cases, cochlear implants are recommended[19], i.e., electronic devices that are surgically implanted in the cochlea. However, they are contraindicated or may provide limited results in cases of cochlear fibrosis or ossification, inner ear malformation and auditory neuropathy[19].

A systematic review study pointed out that HL caused by acquired causes, including pathologies in the prenatal period such as

congenital cytomegalovirus infection, exert negative influences on the cochlear implant results[20]. It is noted that deafness is not merely a pathology or physiological condition that affects the ears and that many deaf people consider it a way of life; they are proud of being members of a community with a common culture, which they call the "Deaf Culture". This consists of sign language, with its own identity, essence and characteristics, in addition to being involved in struggles for their rights to be made available with equality[21]. Many deaf people prefer to communicate in their native visual language and not use verbal and written communication when alternative means are available, such as sign language interpreters or video retransmission services[17].

The social vulnerability resulting from communication barriers was evidenced when it was found that deaf people who are not bimodal bilingual were more likely to have no knowledge STI transmission and prevention means and to adopt risky sexual behaviors, mainly due to the very sociocultural context inherent to this population group, affecting in different ways and intensities the attitudes adopted in the most diverse situations[22]. It was also identified that they were more likely to not seek health services for routine consultations, which makes them more vulnerable to not having access to health promotion and disease prevention actions. This result corroborates the study carried out in Rio de Janeiro, which identified that, due to the absence of Libras interpreters or hearing companions, 63% of the deaf people gave up seeking health services. It was also found that bilingual or oralized deaf people were more likely to understand health professionals, their diagnosis and treatment. On the other hand, deaf people who only communicate in Libras had 79% fewer chances of understanding their diagnosis[3]. This probably occurs because most health professionals do not know how to communicate in Libras, in addition to being unprepared and impatient to welcome this population segment[3].

In this study, it was evidenced that bimodal bilingual deaf people did not believe they had more access to health guidelines. This can be related to the fact that lip-reading skills have limited variation and application, as many words have similar articulations. Thus, under the best conditions, lip-reading allows nearly 30% understanding. In addition to that, some factors can exert a negative influence on the effectiveness of lip-reading, such as poor lighting, accent, mustache, beard, masks and indirect sight lines. In addition, some deaf people pretend to understand lip-reading to avoid embarrassment[17]. A study carried out with 121 deaf adults found that resorting to written Portuguese language and oralization were the communication strategies pointed out by most of the participants as those that most hindered the interaction between deaf people and health professionals[3].

However, even if no statistically significant difference was verified in the fact that bimodal bilingual deaf people believe they have access to health information, it was found that they are more likely to have knowledge about STIs. Thus, the fact that they know how to communicate in two linguistic modalities (Libras and Portuguese language) is a facilitator in accessing health guidelines by other means, such as folders, videos, television commercials and newspapers.

When comparing the data in this study to those of the research entitled "Knowledge, attitudes and practices of the Brazilian population (PCAP)", it was observed that, on the one hand, the percentages of correct answers given by deaf people about the STI transmission and prevention means were lower and that, on the other hand, the percentages corresponding to presence of at least one self-reported symptom of STIs were higher[14]. In addition, it is possible that the prevalence of STI symptoms is even higher, as data obtained from self-reports are subjected to bias due to memory failures and embarrassment. In addition to that, some STIs are asymptomatic or, in some cases, women may have difficulty differentiating "normal" from "abnormal" vaginal discharge, favoring underreporting of these infections[2].

The results of this study are in line with the literature when identifying lack of knowledge on sexual and reproductive health issues among deaf people[7-9]. These results highlight the need for the presence of Libras interpreters in health institutions and the importance of the mandatory inclusion of Libras during health professionals' training process. Particularly during the clinical practice, students and professors should be made aware of the importance of Libras for professionals, as a strategy to improve communication, access to health information and social inclusion of this clientele[23].

Communication barriers and lack of guidelines in the family environment make this population group even more vulnerable. In this study, it was observed that more than half of the participants were not advised about the importance of using condoms, regardless of whether or not they have family members who communicate in Libras. In this sense, a study carried out in West Africa identified that most deaf people ignored the consequences of unsafe or unprotected sex, as a result of the lack of information on sexual and reproductive health, being highly vulnerable to unwanted pregnancies and abortions, especially among unmarried young people[9].

A similar result was found in an ethnographic study developed in Colombia, where it was evidenced that the family approached sexuality in order to repress or prohibit it. Due to the lack of guidelines in the family, deaf people sought information on television and in pornography and, when they had doubts related to sexual health, they resorted to the Internet, that is, they acted when the risk was already found and not to avoid it[7].

In the study conducted in Colombia, the participants also highlighted not using condoms when trusting their sex partner and that they performed periodic ejaculations to avoid infections, in addition to reporting an aversion to sexual health consultations, comparing it to sexual abuse[7]. These results led the authors to conclude that it is fundamental to develop strategies so that the taboo on sexuality is broken within the family, in order to favor the exchange of information and knowledge about sexual behaviors, in addition to providing guidelines on STI transmission and prevention means[7].

The risky sexual behaviors of the participants included in this study presented results similar to those found in PCAP in relation, for example, to sexual practices in life and in the last 12 months, with this, having more than one sex partner in life and having casual sex in the last year. In turn, the frequency found in this study was much higher among those who had more than five casual sex partners in the last year and those who use condoms in these relations, and a percentage lower than those who had sexual intercourse before the age of 15 and more than ten sexual partners in life[14]. In line with these results, a study conducted in New York verified that deaf people were significantly more likely to report two or more sex partners in the last year and lower condom use in their first intercourse than the general population. However, it found that the frequency of condom use in the last sexual encounter was higher in deaf people[15].

Regarding the performance of rapid tests for the diagnosis of HIV, syphilis and Hepatitis B and C, in the current study it was found that more than half of the deaf people were unaware of these tests and that most of the had never undergone them. This fact allows inferring that there may be underdiagnosis and absence of treatment of these infections and that this population group can be more prone to the development of STIs, such as Human Papillomavirus (HPV). This is worrying, as a study conducted in the United States found that deaf people had less knowledge than hearing individuals about HPV, risk of cancer related to it and preventive vaccination[24].

It is noted that health professionals' unpreparedness in communicating with deaf people, with the consequent need for an interpreter, may interfere with the confidentiality of personal information. In turn, this can hinder STI screening and identification. Thus, even when seeking assistance, deaf people may not have access to health education actions satisfactorily and coherently with their needs.

Thus, the deaf population is more vulnerable in terms of access to health guidelines due to lack of communication with equality in health services. Health promotion and disease prevention campaigns are most often not available in formats accessible to deaf people, as they are not accompanied by sign language translations. In this sense, a study carried out in Ecuador created a social network addressing different themes, including sexual health[8]. Although health education favors the knowledge of the population about STIs, it is not always enough to produce behavioral changes. However, it can provide opportunities for the protagonism of individuals and reflections on health vulnerabilities, contributing to safe sexual practices[25]. Therefore, for this to occur, it is crucial to develop educational practices for the deaf and family members, in order to promote individual emancipation, providing the responsibility of self-care in health.

The study has limitations related to the use of the *snowball sampling* technique, which precludes making generalizations about this population segment, also adding the fact that the data are self-reported, given the possibility of memory bias. However, its results are valid because this is a population that is difficult to access and the findings may support the planning of actions aimed at improving the quality of life and self-care in health of this population.

It is noteworthy the need to develop strategies so that access to health information is disseminated with equality to this clientele, respecting their identity and culture, as well as the need to comply with the Brazilian legislation, using Libras in health institutions.

It was verified that more than half of the participants were not instructed on the importance of condom use in the family nucleus, which highlights the need to develop public policies aimed at sexual and reproductive health education for the deaf population. It also highlights the importance of including family members in these activities, given the relevance of their informational and supportive role, even in the sexual health field.

Conclusion

The results evidenced low knowledge of deaf people about STI transmission and prevention means, high prevalence of self-reported STI symptoms, and that being bilingual bimodal is significantly associated with greater knowledge about these aspects and with safer sexual behaviors. The health risk factors identified were as follows: unprotected casual intercourse and not attending routine consultations.

Collaborations:

1 – conception and planning of the project: Veronica Francisqueti Marquete and Sonia Silva Marcon;

2 – data analysis and interpretation: Veronica Francisqueti Marquete, Sonia Silva Marcon and Eraldo Schunk Silva;

3 – writing and/or critical review: Veronica Francisqueti Marquete, Sonia Silva Marcon, Elen Ferraz Teston, Pamela dos Reis, Viviane Cazetta de Lima Vieira, Magda Lúcia Félix de Oliveira, Eraldo Schunk Silva and Inácia Sátiro Xavier de França;

4 – approval of the final version: Veronica Francisqueti Marquete, Sonia Silva Marcon, Elen Ferraz Teston, Pamela dos Reis, Viviane Cazetta de Lima Vieira, Magda Lúcia Félix de Oliveira, Eraldo Schunk Silva and Inácia Sátiro Xavier de França.

Conflicts of interest

There are no conflicts of interest.

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