

A SYSTEMATIC REVIEW OF SCHOLARLY CITATION ON  
HIV/AIDS IN THE DEAF COMMUNITY

By

Megan Trout

A thesis submitted in partial fulfillment  
of the requirements of the  
University Honors Program  
University of South Florida, St. Petersburg

May 2, 2018

Thesis Director: Kyaien O. Conner, Ph.D.

Assistant Professor, Department of Mental Health Law and Policy

University Honors Program  
University of South Florida St. Petersburg

CERTIFICATE OF APPROVAL

---

Honors Thesis

---

This is to certify that the Honors Thesis of

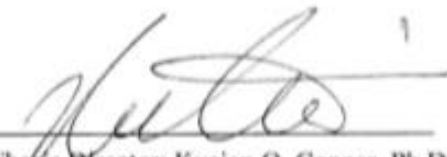
Megan Trout

has been approved by the Examining Committee

on May 2, 2018

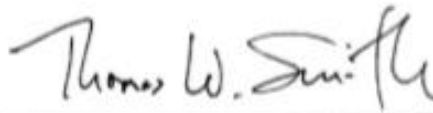
as satisfying the thesis requirement  
of the University Honors Program

Examining Committee:



Thesis Director: Kyaia O. Conner, Ph.D

Assistant Professor, Department of Mental Health Law and Policy



Thesis Committee Member: Thomas Smith

Director of the Honors Program, Professor of Political Science

## **ABSTRACT**

The Deaf community is at a much higher risk of contracting HIV/AIDS compared to the rest of the population; however, there is a distinct lack of research done on this group. The lack of representation of the Deaf community in medicine and disease research has led to this epidemic. The Deaf community also differs in that their understanding of HIV/AIDS and its transmission, symptoms, prevention, and treatments is significantly lower than that of the rest of the population. One reason for this gap in knowledge is the lack of access to informational materials. Deaf individuals cannot always rely on the types of mediums such as television or radio that are typically used to distribute information to the majority. This study reviews fifteen scientific articles regarding the knowledge and perceptions of deaf individuals towards HIV/AIDS. It was found that deaf individuals often feel that they do not have the appropriate access to medical care and that communication between themselves and healthcare workers is difficult. Additional research needs to be done directly with participation from individuals in the Deaf community to discover the most appropriate ways to administer HIV/AIDS information to this community.

## Table of Contents

1. Introduction.....	Page 5
2. Methodology.....	Page 9
3. Results.....	Page 10
4. Discussion.....	Page 14
5. References.....	Page 21

## INTRODUCTION

### 1. The Deaf community

A widely-accepted definition of the Deaf community is given by Baker and Padden (1978): *“The deaf community comprises those deaf and hard of hearing individuals who share a common language, common experiences and values, and a common way of interacting with each other, and with hearing people”* (p. 4).

It can be difficult to pin down just who is included in the Deaf community, but the above definition will be used for this study. It should be noted that the Deaf community does include those with hearing loss, as many deaf individuals still have some sort of hearing ability. There are only a few national surveys in the United States that collect data on deafness and hearing loss. Among these is the Survey of Income and Program Participation (SIPP). Data collected by SIPP in 2002 (US Census Bureau, 2001a), has led to estimates of around 11,000,000 individuals (4.1% of the population), 5 years of age and older, being deaf or hard of hearing (Mitchell, 2006). As for worldwide rates of deafness, it is estimated that about 466 million people have disabling hearing loss with 34 million of these people being children (Deafness and hearing loss, 2018). It is also estimated that by 2050 over 900 million people will have disabling hearing loss (Deafness and hearing loss, 2018).

A key part of the definition stated above is that the Deaf community shares a language. The Deaf community uses sign language as its primary way of communication. American Sign Language is a fully-fledged language with grammatical principals and rules just like other language (Sandler and Lillo-Martin, 2006). It allows the user to express themselves with expansive vocabulary and clear instruction. It differs from other language in that sign language contains no vocalizations. American Sign Language can sometimes be mistakenly thought of as a

backup to English, but it is its own separate language and is held very close by the Deaf community because it supports the other components of their culture (Reagan, 1995).

Another key part of the above definition is that deaf and hard of hearing individuals have a common way of interacting with each other and with hearing people. Their way of communication with sign language plays a big part in this. Sign language is visual in nature. This can create a disconnection when a deaf person tries to communicate with and relate to a hearing individual whose communication is primarily auditory. Hearing individuals can also stereotype deaf individuals which can fabricate a disconnect between the two individuals (Kersting, 1997). This disconnect between hearing and deaf individuals can be especially frustrating and problematic when there is important information that needs to be shared as clearly and accurately as possible. Difficulties in communication can be seen in deaf patients and their hearing physicians and other healthcare workers (Chaveiro, 2009). This communication blockade can explain the frustrations that deaf patients feel when interacting with healthcare professionals.

## 2. Deaf community and medicine

Historically, the Deaf community has been left out of medical polls and surveys as these were often administered via telephone (Barnett & Franks, 1999). As a result, they are absent from the data pool and therefore are underrepresented. This can be dangerous as this lack of information leaves unanswered the question of how many deaf people are underserved and how many are unable to access the medical care/services that they need. To know the needs of all populations and whether they are being met is important as it can help decide the appropriate allocation of funds and research to the groups who need it the most.

Studies show that the health literacy rates of deaf people in America are comparable to the health literacy rates of immigrants in America that speak English as a second language (Barnett, McKee, Smith, & Pearson, 2011). This information suggests that language could potentially be a significant factor in the low health literacy rates of deaf individuals. Language and communication difficulties may be acting as a barrier between deaf individuals and the institutions put in place to educate people on health.

The medical community lacks procedures to obtain health information from those who primarily communicate in a visual way, such as using sign language, further the medical community lacks effective strategies to distribute important health information to these individuals. This combination can lead to problems such as the inadequate health literacy rates in the Deaf community as previously discussed (McKee et al., 2015). It is very important that the Deaf community has access to medical information such as the prevention and treatment of communicable diseases because health literacy is an effective method for improving health outcomes (Belcastro & Ramsaroop-Hansen, 2017).

### 3. The Deaf community and AIDS/HIV

HIV or Human Immunodeficiency Virus acts against the body's immune system. The damage done to the immune system can eventually lead to AIDS, where a person's resistance to infection is greatly lowered. There is no cure to AIDS but there is treatment. These treatments aim to prevent secondary illnesses from forming and they slow down the progression of the disease, thus making the condition manageable (Leslie, 2016). HIV is spread through coming into contact with certain bodily fluids of a person who already has HIV. One common way of

contracting the virus is engaging in sexual contact with an infected person. Another way is by sharing needles or syringes with an infected person.

The Deaf community has been found to be more vulnerable to the infection of HIV (Touko, Mboua, Tohmuntain, & Perrot, 2010). The spread of HIV can be protected against when it comes to sexual contact by the use of condoms. However, deaf individuals have been reported to use condoms less frequently during vaginal intercourse than the rest of the population (Zodda, 2015).

Within the Deaf community there are subpopulations of people who are more at risk of developing AIDS than others. Some of these subpopulations include deaf individuals who are female, less educated, and of a lower-income (Heiman, Haynes & McKee, 2015). Getting tested for HIV is important because getting treatment soon after being infected can greatly prolong the amount of time it takes for a person to acquire AIDS or in some cases, completely prevent the development of AIDS (HIV/AIDS, 2005).

#### 4. Objective

The major objective of this study was to find what information was already available regarding the knowledge, opinions and perceptions of HIV/AIDS of people who self-identify as being part of the Deaf community. Looking at multiple studies gave a more representative answer of whether the Deaf community has enough knowledge of HIV/AIDS or whether they are a group at increased susceptibility because of a lack of information. By examining what studies have already been done and published, it can then be stated whether there has been enough data published to make appropriate conclusions about this topic.



## **METHODOLOGY**

I utilized systematic review methodology to identify articles that collected data on the knowledge and perceptions of HIV/AIDS held by deaf individuals. The articles included in this review were found in online journals using the USF library systems search. Articles were only included if they could be found online and had open access to the public or if they could be accessed through the University of South Florida's library system. Key terms used in our search were 'deaf', 'HIV', and 'AIDS'. Articles were chosen that could be found in a scientific journal, and their research needed to be targeted specifically toward deaf individuals. Qualitative and quantitative studies were included in this review. At this point of the search process, twenty-four articles were found that met these preliminary criteria.

After compiling a list of articles that contained the appropriate subject matter, it was then made sure that the articles presented their own original research that followed the scientific method. Articles that discussed the Deaf community's knowledge and perceptions of HIV/AIDS but did not conduct their own study or provide any new data were not included. Articles were deemed appropriate only if their data was taken directly from deaf individuals. For example, an article regarding the perceptions and feelings a parent of a deaf child has on their child's susceptibility to HIV/AIDS would not have been included as this would not be about the perceptions of the deaf individual. Surveys regarding knowledge and/or perceptions of HIV/AIDS needed to be taken by the participant themselves and interviews with participants needed to be translated or conducted in ways that would allow for open communication, such as with the help of a translator. Following this, there were fifteen studies remaining.

After the articles were chosen they were then compiled into a table highlighting their methodology and their major findings. These studies span multiple age groups and were conducted at multiple sites throughout the United States as well as in multiple countries.

## **RESULTS**

Fifteen studies met the inclusion criteria of this systematic review. The two main methods of gathering information throughout the studies were survey and interviews/group discussion. A majority of the quantitative data comes from the studies using survey sampling. The studies that had the largest sample sizes most often used surveys and questionnaires to collect data as this method can be time-efficient. Also, surveys were used most often when testing participants for their knowledge of HIV/AIDS as opposed to their perceptions and feelings.

The other commonly used method, interviews/group discussions, provided participants with a more open-ended way of discussing their knowledge and perceptions of HIV/AIDS. Interviews were recorded and then reviewed to find recurring themes. This type of study most often resulted in qualitative data and small sample sizes. The study with the smallest sample size (n=5) conducted individual interviews with each of their participants (Mallinson, 2004).

The majority of the studies (n=9) were conducted in the United States, however five other countries were included: South Africa, Swaziland, Republic of Cameroon, Brazil, and Nigeria. The study with the largest sample size (n= 700) was from the United States (Goldstein et al., 2010) which accounts for 34.0% of the deaf participants included in the fifteen studies overall (Taegtmeyer et al., 2009).

The total sample size for all the studies was 2,056 individuals. Samples sizes ranged from 5 to 700 participants (mean: n= 137). Some studies also included hearing individuals for

comparison. Ages of participants that were included spanned 10yrs- 64yrs, however not every study listed ages.

Table 1 represents a compilation of the fifteen studies that met the criteria of this paper at the time it was written. The methods that each study used, and their major findings are listed.

**Table 1. Studies on the Knowledge and Attitudes of Deaf Individuals toward AIDS/HIV**

<b>Study</b>	<b>Country</b>	<b>Sample</b>	<b>Study Design/ Data Analysis Method</b>	<b>Major Findings</b>
Brown, M. m., & Mkhize, Z. (2014)	South Africa	8 deaf persons residing in rural and peri-urban areas of Kwa Zulu-Natal Province, South Africa, ages 26-40.	Focus groups discussed cultural beliefs and gender-related norms to explicate HIV/AIDS risk behaviors among deaf persons. Ethnographic methods were used to identify themes from the discussion.	A limited access to HIV/AIDS information was reported by participants. Risk behaviors of the deaf population were similar to those of the larger South African population.
Oyedunni S. Osowole, a., & Oladimeji Oladepo, a. (2000)	Nigeria	309 deaf secondary students from two different schools, ages 10-22 years.	AIDS questionnaire was administered at baseline and after a peer-intervention.	The difference in pre-post group scores for the knowledge of prevention, transmission, and causes of AIDS was significant in the intervention as compared to the control group. Difference in scores for perceived susceptibility was not significant among either groups.
Donnelly-Wijting, K. P. (2015)	United States	86 (45 deaf and 41 hearing) participants from Florida and Washington, D.C., 18 and older	Used the AIDS Risk Reduction Model (ARRM) to assess knowledge of HIV, attitudes about AIDS, risk behavior, perception of susceptibility of contracting HIV, and self-efficacy in participants.	Deaf adults were found to have less tolerant attitudes about AIDS, less self-efficacy, and less knowledge on HIV as compared to hearing adults.
Bat-Chava, Y., Martin, D., & Kosciw, J. G. (2005)	United States	134 deaf and hard of hearing individuals from New York State.	Focus groups and individual interviews to look for themes.	Hard of hearing participants and oral deaf participants were more knowledgeable about HIV/AIDS than deaf participants who used sign language. Deaf adults had less HIV/AIDS knowledge than juvenile participants. Participants living in urban areas and larger deaf communities were more exposed to information. Communication

<b>Study</b>	<b>Country</b>	<b>Sample</b>	<b>Study Design/ Data Analysis Method</b>	<b>Major Findings</b>
				difficulties with medical providers was reported by all participants.
Goldstein, M. F., Eckhardt, E. A., Joyner-Creamer, P., Berry, R., Paradise, H., & Cleland, C. M. (2010)	United States	700 adolescence attending high schools for the deaf, ages 13-17 years.	HIV risk and knowledge surveys were administered in ASL using laptop computers.	On average, approximately half ( $x=7.2$ ) of the 14 knowledge items (median: 7.0; range: 0-14; $sd = 3.8$ ) were answered correctly by students. Findings indicate that this population needs HIV prevention education in school that is accessible to them linguistically and culturally.
Mallinson, R. K. (2004)	United States	5 deaf, gay men, ages 24-49 years.	Interviews were done individually with all the participants. Interviews consisted of open-ended questions and discussion. The interviews were then examined for recurring themes.	Frequently recurring themes reported from the interviews were "multiple [AIDS-related] deaths," being "ill-informed about illness," representing "a minority within a minority," and "ineffective health care response."
Crowe, T. V. (2003)	United States	31 deaf primarily ASL-using persons, ages 21-46 years, selected due to their higher perceived risk of HIV infection due to communication barriers.	Focus groups of deaf, sign language users were created. Participants were asked to take part in group discussions with the purpose of creating HIV prevention materials.	Three major difficulties about accessing HIV information were found among the participants: obtaining the information, obtaining sign language interpreters, and understanding English. Almost all group members personally knew of someone who had HIV or AIDs. AIDS questionnaire was administered at baseline and after a peer-intervention.
Groce, N. (2006)	Swaziland	191 rural and urban hearing and deaf adults	A questionnaire was administered, with questions on knowledge of HIV/AIDS symptoms, transmission and prevention, as well as sources of information about HIV/AIDS. Additional questions were asked about accessibility of HIV testing services and HIV/AIDS-related healthcare.	Levels of knowledge about HIV/AIDS were significantly different between deaf and hearing participants. Belief in incorrect modes of HIV transmission and prevention was significantly more likely to be seen in the deaf population. Communication difficulties with healthcare staff was reported by 99% deaf participants.
Touko, A., Mboua, C. P., Tohmuntain, P. M., & Perrot, A. B. (2010)	Republic of Cameroon	118 deaf participants (for the behavioural component) 101 participants (for HIV serology testing)	Participants were interviewed on their behaviors. Serology testing was done by health personnel.	Hearing impaired participants were very involved in risky sexual behaviors.

<b>Study</b>	<b>Country</b>	<b>Sample</b>	<b>Study Design/ Data Analysis Method</b>	<b>Major Findings</b>
Kordus, M. N. (1999)	United States	21 participants with hearing loss and who were HIV+ or had AIDS	Used a demographic questionnaire evaluating coping effectiveness, self-efficacy, confronting one's own mortality.	A significant positive relationship between Self-Efficacy and Coping Effectiveness was found. A significant negative relationship was found between Confronting One's Mortality and Coping Effectiveness.
Bisol, C. A., Sperb, T. M., Brewer, T. H., Kato, S. K., & Shor-Posner, G. (2008)	Brazil	42 deaf students attending a special nonresidential public school for the deaf and 50 hearing students attending a regular public school, ages 15-21 years.	A computer-assisted questionnaire was administered. A branched decision-tree structure was used to determine level of sexual experience and hearing status.	Scores on HIV/AIDS knowledge was lower in Deaf participants. Deaf students reported less sexual activity than hearing students, however, no other significant differences were found in health-related attitudes and behaviors. A large number of deaf adolescents reported having a friend with AIDS.
Heiman, E., Haynes, S., & McKee, M. (2015)	United States	282 deaf participants aged 18–64 from the greater Rochester, NY	Self-reported sexual behaviors of deaf, ASL-using individuals were characterized and compared with a general population group. Descriptive analyses were performed, including stratification by gender, age, income, marital status, and educational level.	Rates of getting tested for HIV was similar between deaf and hearing groups (47.5% vs 49.4%). However, testing was significantly lower among female deaf individuals (46.0% vs 58.1%), deaf individuals who are less educated (31.3% vs 57.7%) and lower-income Deaf (44.4% vs 69.7%).
de Andrade, V., & Baloyi, B. (2011)	South Africa	7 deaf, SASL-using adolescents at a school for deaf learners in a township in Johannesburg	Interviews were conducted regarding participant's sources of information and their concerns regarding the adequacy of their level of knowledge HIV/AIDS.	Literacy difficulties, language barriers and limited access to information put Deaf adolescents at risk of lack of information about HIV/AIDS
Heuttel, K. L., & Rothstein, W. G. (2001)	United States	34 deaf college students, ages 18-40 years and 46 hearing college students, ages 18-32 years.	Questionnaires were administered to participants concerning knowledge and sources of HIV/AIDS information.	Deaf participants attained significantly lower HIV/AIDS knowledge scores than hearing participants. Deaf participants used their family and friends more for information about HIV/AIDS than they used materials such as television and literary sources.
Baker-Duncan, N., Dancer, J., & Gentry, B. (1997)	United States	129 students, grades 9-12, at five state schools for the deaf.	Surveys were administered regarding knowledge of HIV/AIDS	In grade 9, 31 percent of responses demonstrated obtained knowledge. This figure had increased to only 40 percent by grade 12. Approximately 49–57 percent of responses represented emerging knowledge. There was a slight decrease in responses indicating no knowledge from 20 percent in grade 9 to 11 percent in grade 12.

The findings showed that regardless of the country it was conducted in, Deaf individuals had less knowledge about HIV/AIDS than the rest of the population. Deaf individuals were also found to be sexually active at a younger age and being involved more frequently in behaviors that increase the likelihood of HIV. The lack of knowledge or the misinformation obtained about HIV/AIDS spanned multiple facets of the disease including the spread, symptoms, and treatment.

Deaf individuals also expressed a discontentment at the amount and the quality of communication between themselves and their hearing physicians. There has been reported mistrust and lack of willingness to participate in the medical world. Deaf participants in these surveys also reported a lack of accessible learning materials about HIV/AIDSs. The biggest learning resource that was reported by participants was friends and family, who were often also a part of the Deaf community.

Peer training and intervention methods were reported to increase the knowledge of HIV/AIDS in juveniles. This knowledge covered multiple aspects of the disease including transmission, symptoms, and treatments. However, participants showed no change in their frequency in participating in behaviors that could lead one to contract HIV after the intervention sessions.

## **DISCUSSION**

### *Knowledge*

The results of our systematic review found that the Deaf community overall has a lesser amount of knowledge about HIV/AIDS than the rest of the population. Also discovered in our review was that deaf individuals often hold false beliefs about HIV. Deaf individuals were more

likely to believe in incorrect modes of transmitting HIV such as hugging or airborne transmission and they were more likely to believe in incorrect methods of preventing HIV such as eating healthy foods (Groce, 2006). Other false information reported by deaf participants was the belief that AIDS can be cured and the belief that a person with HIV can be identified based on physical appearance (Touko, Mboua, Tohmuntain, & Perrot, 2010). Understanding the modes of transmission, symptoms, and treatment of HIV/AIDS is extremely important for the overall prevention of HIV in the community and outside of it. Knowing the symptoms of HIV can lead to early detection. The sooner HIV is detected, the better. Early detection and treatments can lead to a slowing of the progression of disease in an individual's body. This can prevent the fast degradation of one's immune system (Cohen et al., 2010). Furthermore, it is important for someone to know what treatments are available to them should they find themselves with this disease. If an individual can realize that they are infected with the virus early on, and they know how it is spread, then they can protect themselves by getting proper treatment and they can prevent the spread of the virus to others by eliminating risky behaviors from their lifestyle.

### *Access to Materials*

The Deaf community does not have access to the proper informational materials on HIV/AIDS which may lead to the misinformation in this population. Perhaps the best way to prevent HIV/AIDS is through education (Oyedunni, Osowole, & Oladimeji Oladepo, 2000). This education can come in the way of physician advice/intervention, peer groups, interventions with juveniles, and through the dispersal of informative media such as video.

The vast majority of information about HIV that deaf participants received was self-reported to be from family and/or friends (Heuttel & Rothstein, 2001). Medical information that is

not given by a trained and certified professional can often be misinformed and sometimes even dangerous. It is likely that the tight-knit nature of the Deaf community supports this trust between its members and creates a more homogenous system of beliefs between them (Modry, 1994). As a result of the homogeneity of the community, it can potentially take a greater amount of time before beliefs and attitudes start to shift (Williams & Abeles, 2004).

Not only are deaf individuals likely to be very reliant on the ideas and opinions of others within their community but they are also likely to be frustrated with the communication barriers they face with hearing physicians (Mallinson, 2004). Deaf patients often feel unheard or unable to communicate appropriately with their doctors or other healthcare professionals because they don't have the tools necessary to do so, such as obtaining an interpreter or understanding English (Crowe, 2003). Those who use sign language as their first language may have a hard time when trying to communicate with healthcare professionals that doesn't use sign (Groce, 2006). Many deaf individuals have very low reading levels compared to their age, with 'use of American Sign Language with physicians' and 'Deaf community membership' being associated with lower reading scores (Zazove, 2013). Therefore, the solution of providing the Deaf community with reading materials may not work as well as hoped. Underlying this problem is the misconception that American Sign Language is just the English language using your hands. American Sign Language is not English and has its own structure and grammatical principles (Sandler and Lillo-Martin, 2006). Additionally, testing on highly-educated deaf population samples has demonstrated risk of low health literacy within the community (Donnelly-Wijting, 2015). Therefore, using English reading material as a way to distribute information to this population may not be the most effective solution (Pollard & Barnett, 2009).



Based upon our review, deaf individuals who were vocal and did not solely use sign language to communicate were more knowledgeable about HIV (Bat-Chava et al., 2005). As previously discussed, American Sign Language is its own complete language. Because sign language is visual in nature it seems appropriate to create informational material that is visual. Videos may be helpful in distributing the message of the spread, symptoms, and treatment of HIV in the Deaf community, as they have been shown to significantly increase knowledge scores among deaf individuals for other diseases such as testicular cancer (Sacks et al., 2013)

### *Perceptions of HIV/AIDS in the Deaf Community*

Deaf adults were found to have less tolerant attitudes about AIDS as compared to hearing adults (Donnelly-Wijting, K. P.). In interviews with gay, deaf men, it was found that the participants struggled with the threat of being infected with HIV. They also struggled with managing three different communities: deaf, gay, and hearing (Mallinson, 2004). In these situations, the health complications can go beyond just physical but an adverse effect on mental health can be an outcome. The participants stated that they felt like “a minority within a minority” and felt “ill-informed about illness”. Another recurring theme from these interviews was participants reporting “multiple [AIDS related] deaths” of people they knew (Mallinson, 2004). Having known someone with HIV/ AIDS was commonly reported by participants throughout the studies (Crowe, 2003) (Bisol et al., 2008).

Even though information has been presented stating that deaf individuals contract HIV at a higher rate than the rest of the population, some deaf individuals do not feel that they are at risk for HIV/AIDS, reporting that ‘HIV is a hearing person’s disease (Goldstein, 2006). Certain groups within the Deaf community get tested for HIV at a lower rate than the rest of the

population. These groups include female, less-educated, and lower-income deaf individuals (Heiman, Hayes & McKee, 2015).

### *Outcomes of Solutions from the Reported Studies*

Deaf individuals often depend on the feelings and information provided to them by those in their community therefore, using community or peer-to-peer interventions could be a viable option in disbursing information. Peer-to-peer intervention and teaching was conducted in one of the identified studies. This study, conducted with a juvenile population, reported that after the peer counseling, students were significantly more knowledgeable about the spread, symptoms, and treatment of HIV. However, it was reported that after receiving peer counseling, students continued to participate in behaviors that put them at risk for contracting HIV, and they participated in these acts at around the same frequency that they did before the peer counseling (Oyedunni, Osowole & Oladimeji Oladepo, 2000). This experiment should be duplicated with a larger sample using different age groups and using different materials/practices during the peer-to-peer counseling to examine the findings.

Another potential solution to get the opinions and participation of the Deaf community identified was the use of interviews. The majority of these interviews used open-ended questions, which allowed free discussion with individuals. These interviews were often one-on-one and confidential so as to alleviate any fears of invasion of privacy. Often the interviews were screened for recurring themes. These themes included lack of access to information and trouble communicating with health professionals (Mallinson, 2004). Volunteered ideas from the participants of the Deaf community were to specifically include deaf individuals in distributed material about HIV/AIDS (Crowe, 2003). This alone might be enough to catch the attention of

someone who is deaf, and it might also convey the message that AIDS is something that is affecting the Deaf community. This type of advertisement can include posters and video material using both sign language and captions.

### *Additional Need for Testing*

It would be beneficial for the studies listed to be replicated to test the validity of the results. Many of the studies included in this paper had small sample sizes and used convenient sampling methods. These factors make it difficult to generalize the results as being representative of the entire Deaf community. The statistics could be improved by more random sampling with larger sample sizes.

One possible solution is the intervention of physicians. It is shown that the Deaf Community as a whole do not have as favorable of an opinion about their physicians. They do not feel like communication is easily accessible to them (Bat-Chava, 2005). Ways to create better communication between hearing physicians and their deaf patients should be tested. Additionally, comparing self-reported level of satisfaction with physician/ healthcare from deaf individuals to instance of HIV/AIDS should be tested.

It is often reported that deaf patients are unsatisfied with the communication between themselves and their physicians. A potential solution to this problem would be to increase the number of deaf individuals working in the healthcare industry. This kind of diversity could be beneficial in that it would give deaf patients a more specialized kind of care, but it could also normalize the use of sign language and visually-oriented health materials in a medical setting.

As a result of the lack of research on HIV/AIDS in the Deaf community and the distribution of informational materials, studies of every kind can be beneficial. Different

informational mediums should be researched in order to find the efficiency of each one. Also, more deaf individuals including deaf medical workers and deaf researchers should be included in the making of these studies.

### *In Conclusion*

The purpose of this systematic review was to examine the body of knowledge in the field about HIV/AIDS in the Deaf community. There was a limited number of studies that could be found detailing deaf individual's knowledge of HIV/AIDS and/or their perceptions towards the disease. It is repeatedly stated that the Deaf community has a lack of access to medical information, specifically information of HIV/AIDS however, there is also a lack of studies on possible solutions. Based upon our findings, more trials are urgently needed to examine strategies for disseminating important and potentially life-saving information to those who primarily use vision as their way to receive information and who use their hands to communicate to the world.

## REFERENCES

- Baker-Duncan, N., Dancer, J., & Gentry, B. (1997). Deaf adolescents' knowledge of AIDS: grade and gender effects. *American Annals Of The Deaf*, 142368-372
- Barnett S, Franks P. (1999) Telephone ownership and deaf people: implications for telephone surveys. *Am J Public Health*. 1999;89(11):1754–1756.
- Barnett, S., McKee, M., Smith, S. R., & Pearson, T. A. (2011). Peer reviewed: Deaf sign language users, health inequities, and public health: Opportunity for social justice. *Preventing chronic disease*, 8(2).
- Bat-Chava, Y., Martin, D., & Kosciw, J. G. (2005). Barriers to HIV/AIDS knowledge and prevention among deaf and hard of hearing people. *AIDS Care*, 17(5), 623-634.  
doi:10.1080/09540120412331291751
- Belcastro, P. A., & Ramsaroop-Hansen, H. (2017). Addressing the Antinomy Between Health Education and Health Literacy in Advancing Personal Health and Public Health Outcomes. *Journal Of School Health*, 87(12), 968-974.
- Bisol, C. A., Sperb, T. M., Brewer, T. H., Kato, S. K., & Shor-Posner, G. (2008). HIV/AIDS Knowledge and Health-Related Attitudes and Behaviors among Deaf and Hearing Adolescents in Southern Brazil. *American Annals Of The Deaf*, 153(4), 349-356.
- Brown, M. m., & Mkhize, Z. (2014). Perceptions of HIV/AIDS: A Conversation with Deaf Adults in Kwa Zulu-Natal Province, South Africa. *Journal Of The American Deafness & Rehabilitation Association (JADARA)*, 49(1), 27-40.
- Chaveiro, N., Porto, C. C., & Barbosa, M. A. (2009). Review Article: The Relation Between Deaf Patients and the Doctor. *Brazilian Journal Of Otorhinolaryngology*, 75147-150.  
doi:10.1016/S1808-8694(15)30846-6

- Cohen, M. S., Gay, C. L., Busch, M. P., & Hecht, F. M. (2010). The detection of acute HIV infection. *The Journal of infectious diseases*, 202(Supplement\_2), S270-S277.
- Crowe, T. V. (2003). Using Focus Groups to Create Culturally Appropriate HIV Prevention Material for the Deaf Community. *Qualitative Social Work: Research And Practice*, 2(3), 289-308. doi:10.1177/14733250030023005
- de Andrade, V., & Baloyi, B. (2011). 'Some of the things I understand but not all of it'. A group of deaf adolescents' sources of knowledge and concerns regarding the adequacy of their level of knowledge about human immunodeficiency virus/acquired immune deficiency syndrome. *Vulnerable Children And Youth Studies*, 6(3), 255-262. doi:10.1080/17450128.2011.597795
- Deafness and hearing loss. (2018, March 15). Retrieved May 4, 2018, from <http://www.who.int/en/news-room/fact-sheets/detail/deafness-and-hearing-loss>
- Donnelly-Wijting, K. P. (2015). HIV/AIDS and deaf people: The role of psychological factors and HIV risk reduction. *Dissertation Abstracts International*, 76.
- Goldstein, M. F., Eckhardt, E. A., Joyner-Creamer, P., Berry, R., Paradise, H., & Cleland, C. M. (2010). What do deaf high school students know about HIV?. *AIDS Education And Prevention*, 22(6), 523-537. doi:10.1521/aeap.2010.22.6.523
- Goldstein MF, Eckhardt EA, Joyner P, Berry R (2006). An HIV knowledge and attitude survey of deaf U.S. adults *Deaf Worlds*, 22 (1), 163-183.
- Groce, N., Yousafzai, A., Dlamini, P., Zalud, S., & Wirz, S. (2006). HIV/AIDS and disability: a pilot survey of HIV/AIDS knowledge among a deaf population in Swaziland. *International journal of rehabilitation research*, 29(4), 319-324.

- Heiman, E., Haynes, S., & McKee, M. (2015). Sexual health behaviors of Deaf American Sign Language (ASL) users. *Disability And Health Journal*, 8(4), 579-585.  
doi:10.1016/j.dhjo.2015.06.005
- Heuttel, K. L., & Rothstein, W. G. (2001). HIV/AIDS knowledge and information sources among deaf and hard of hearing college students. *American Annals Of The Deaf*, 146(3), 280-286. doi:10.1353/aad.2012.0067
- HIV/AIDS. (2005, June 21). Retrieved from <https://www.hiv.va.gov/patient/basics/what-is-AIDS.asp>
- Kersting, S. A. (1997). Balancing between deaf and hearing worlds: Reflections of mainstreamed college students on relationships and social interaction. *Journal of Deaf Studies and Deaf Education*, 252-263.
- Kordus, M. N. (1999, January). Factors that influence coping with HIV disease in deaf individuals. (immune deficiency). *Dissertation Abstracts International*, 60, 2948.
- Ladd, P. (2003). *Understanding deaf culture: In search of deafhood*. Multilingual Matters.
- Leslie, S. (2016). HIV/AIDS: a postmodern epidemic and its depiction. *CHOICE: Current Reviews for Academic Libraries*, (7). 971.
- Mallinson, R. K. (2004). Perceptions of HIV/AIDS by Deaf Gay Men. *JANAC: Journal Of The Association Of Nurses In AIDS Care*, 15(4), 27-36. doi:10.1177/1055329004267338
- McKee, M. M., Paasche-Orlow, M. K., Winters, P. C., Fiscella, K., Zazove, P., Sen, A., & Pearson, T. (2015). Assessing health literacy in Deaf American Sign Language users. *Journal Of Health Communication*, 20(Suppl 2), 92-100.  
doi:10.1080/10810730.2015.1066468

- Mitchell, R. (2006). How Many Deaf People Are There in the United States? Estimates From the Survey of Income and Program Participation, *The Journal of Deaf Studies and Deaf Education*, 11(1), 112–119
- Reagan, T. (1995). A sociocultural understanding of deafness: American Sign Language and the culture of deaf people. *International Journal of Intercultural Relations*, 19(2), 239-251.
- Sacks, L., Nakaji, M., Harry, K., Oen, M., Malcarne, V., & Sadler, G. (2013). Testicular Cancer Knowledge among Deaf and Hearing Men. *Journal Of Cancer Education*, 28(3), 503. doi:10.1007/s13187-013-0493-x
- Sandler, W., & Lillo-Martin, D. (2006). *Sign language and linguistic universals*. Cambridge University Press.
- Sangowawa, A. O., Owoaje, E. T., Faseru, B., Ebong, I. P., & Adekunle, B. J. (2009). SEXUAL PRACTICES OF DEAF AND HEARING SECONDARY SCHOOL STUDENTS IN IBADAN, NIGERIA. *Annals of Ibadan Postgraduate Medicine*, 7(1), 26–30.
- Taegtmeier, M., Hightower, A., Opiyo, W., Mwachiro, L., Henderson, K., Angala, P., & ... Marum, E. (2009). A peer-led HIV counselling and testing programme for the deaf in Kenya. *Disability & Rehabilitation*, 31(6), 508-514.
- Touko, A., Mboua, C. P., Tohmuntain, P. M., & Perrot, A. B. (2010). Sexual vulnerability and HIV seroprevalence among the deaf and hearing impaired in Cameroon. *Journal Of The International AIDS Society*, 13(1), 1-8. doi:10.1186/1758-2652-13-5
- Oyedunni S. Osowole, a., & Oladimeji Oladepo, a. (2000). Effect of Peer Education on Deaf Secondary School Students' HIV/AIDS Knowledge, Attitudes and Sexual Behaviour. *African Journal Of Reproductive Health / La Revue Africaine De La Santé Reproductive*, (2), 93. doi:10.2307/3583453



Pollard Jr, R. Q., & Barnett, S. (2009). Health-related vocabulary knowledge among deaf adults.

*Rehabilitation Psychology, 54(2), 182.*

Williams, C. R., & Abeles, N. (2004). Issues and Implications of Deaf Culture in Therapy.

*PROFESSIONAL PSYCHOLOGY RESEARCH AND PRACTICE, (6). 643.*

Zazove, P., Meador, H. E., Reed, B. D., & Gorenflo, D. W. (2013). Deaf persons' English reading levels and associations with epidemiological, educational, and cultural factors.

*Journal of health communication, 18(7), 760-772.*

Zodda, J. j. (2015). Condom Use Among Deaf College Students. *Journal Of The American*

*Deafness & Rehabilitation Association (JADARA), 49(2), 86-101.*