Dissertation Abstract

Social Network Analysis in the Decision to Test for HIV

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ABSTRACT: This study’s purpose was to examine how information flows through informal and more relaxed interactions to influence individuals’ decisions to test for HIV. Promotion of HIV testing is critical in the fight against HIV and AIDS. A sample of 33 females and 29 males of African and Caribbean origin who had previously tested positive or negative for HIV participated in the study. By using measurement instruments adapted from Silverman, Hecht, McMillin, and Chang (2008), four types of social network ties were identified that influenced individuals’ decisions to get tested for HIV. The four types of social network ties were immediate family, extended family, friends, and acquaintances. A mixed method approach (Creswell, 2008) was applied through simultaneous collection of a combination of qualitative and quantitative data. Specifically, social networks for individual participants were defined using a name generator followed by in-depth interviews. A thematic analysis of the qualitative descriptions of the network members’ influence was performed. Statistical tests were conducted to determine the influence of each of the four social network relationship ties in HIV testing. The tallied results of the quantitative and qualitative data demonstrated the influence of different social networks in decisions to test for HIV.

Problem Statement

The Joint United Nations Program on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) (2007) reported that HIV testing contributes to the reduction of new infections from HIV transmission. When people living with HIV are totally unaware of their HIV status, they will continue to spread the virus to their sexual partners. This is why the promotion of HIV testing is important.

Despite the progress made in potential life-saving treatment of HIV/AIDS, the majority of infected people still present themselves very late for testing with advanced HIV-related illnesses (UNAIDS/WHO, 2010). The British HIV Association (2006) reported 25% of diagnoses occurred too late, and that late diagnosis accounted for 35% of HIV-related deaths in the United Kingdom. In 2009, UNAIDS and the WHO reported that about 33.4 million people around the world were
living with the AIDS virus, and the number of people newly infected globally had remained at about 2.7 million annually.

The Public Health Agency of Canada (2008b) reported that about 27% of the 58,000 Canadians living with HIV are unaware of their status, and are therefore unable to obtain treatment even when treatment is accessible. The Public Health Agency also noted that HIV rates in Canada have increased over the past five years. Since many of the infected individuals are unaware of their condition, HIV/AIDS has remained a hidden epidemic in the country.

In their 2008 report, the Public Health Agency found that, by 2007, over 20,000 cases of AIDS had, so far, been diagnosed in the country. The number of diagnosed new infections has been contained at about 300 per year due to the impact of antiretroviral therapy (Public Health Agency of Canada, 2008a). Encouraging people to get HIV testing could not only radically improve access to treatment, but also reduce the further spread of HIV/AIDS.

Social Network Strategies in HIV Testing

Wellman (1988) defined social networks as collections of people and/or organizations connected to each other through relationships. Haythornthwaite (1996) noted that social networks also refer to interactions between people and organizations, including who knows, works with, or communicates with whom.

Social Network Theory views social relationships in terms of nodes and ties. Nodes are the individual actors in a network and ties are the relationships between the individual actors or network members. Social network theory differs from sociological theory that defines society as built up of individuals. Instead, the theory emphasizes the relations between individuals, and models society as networks of sets of relations or ties. Wasserman and Faust (1999) noted that relational ties (linkages) between actors are routes for transfer or flow of resources (either material or nonmaterial). Wellman (1988) viewed the network as a resource for social support, emotional support, companionship, time, information, knowledge, expertise, money, business transactions, and shared activity. He also noted that social networks could have some constraining effects on the individual because of lack of access to social capital.

Social network analysis is a process for analyzing a social network and identifying key actors, groups, and vulnerabilities, as well as the changes in these variables. It provides a rich set of concepts and analytical ways with which to understand the patterns of resource exchange relationships by empirical observation of these relationships. When applied to HIV testing, social network analysis identifies the type of information influencing individuals’ decisions to get tested for HIV; actors in a social network can possess helpful information sources in network outlets. Social network analysis reveals how this information flows around all the network members.

The original concept of social networks was developed by Georg Simmel at the beginning of the 20th century (Cross & Parker, 2004). Since its inception, the concept has been developed and applied by modern computer technologies. Recently, social network approaches have turned out to be useful in explaining many real-world phenomena in social studies.

intervention. The results showed that network intervention outperformed the standard approach in the level of HIV risk reduction. Amirkhanian, Kelly, Kabakchieva, McAuliffe, and Vassileva (2003) used social network analysis to study young men who have sex with men in Russia. An HIV Prevention study of injection drug users and their drug and sexual network members in Thailand and Philadelphia, by Latkin et al. (2009) found that injection drug users in dense networks shared needles more frequently than those in less dense networks. Social network research continues to be applied in public health.

In promoting HIV testing, McCree, Eke, and Williams (2007) suggested that social network strategies provided an opportunity to target entire networks, if needed, rather than just individuals, because actors in a network are linked to each other by social relationships. From 2003-2005, the Centers for Disease Control and Prevention (CDC) demonstrated the feasibility of using social network strategies to identify individuals with undiagnosed HIV infection (CDC, 2006). The recruiters targeted men of colour who have sex with men, and men who have sex with men and are also injection drug users in their social networks. However, the model could still be applied to the wider population without the need of enlisting recruiters.

HIV/AIDS is a stigmatized illness. Singling out particular population groups for testing can stigmatize patients with the disease, which then causes others to resist all attempts to test for HIV (Halkitis, et al., 2011). HIV patients have a right to refuse testing for HIV, if they wish. Patients are protected by law and cannot be pressured or forced into testing for HIV against their will (Baggaley, 2008). Enlisting people to actually recruit others for HIV testing is a breach of the confidentiality that is normally a pre-requisite for HIV testing. The purposeful and planned use of social network strategies will more likely provide an effective approach in identifying persons with undiagnosed HIV infection for testing.

Methods

This study was retrospective, with primary data collection from participants who already had had HIV testing. The mixed method approach that was used combined qualitative and quantitative techniques for data collection. The quantitative method’s purpose was to identify the independent and dependent variables in the study and their relationship, as well as the mediating and moderating variables in the decisions to get HIV testing.

The qualitative method was designed to collect expressions of personal experiences from participants. A thematic analysis of the qualitative descriptions of the network members’ influence in the individuals’ decisions to get HIV testing was performed. Data collected from the two research techniques were merged into one coherent whole that was analyzed and interpreted as a single data set for the study.

Analysis of Results

SPSS 16.0 was used to manage and analyze the quantitative data. Descriptive statistics were computed for characteristics of the participants and their networks. Analysis of variance (ANOVA) and t-tests were performed to compare the network characteristics across the subgroups of participants and across types of networks. Independent-samples t-tests were conducted to assess the relationship of the social network variables with social support. Evidence of independent-samples t-tests are shown in tables. Chi-square tests were conducted to compare the influence of family
members, extended family members, friends and acquaintances in HIV testing. The results did not show any statistically sound distinction because the sample size was not large enough.

The qualitative inquiry helped to capture the data that quantitative methods of research would not have managed to capture. Some factors that influenced individuals’ decisions to get HIV testing could be understood fully through qualitative research. The mixed method approach used in this study had considerable merit in giving more strength and credibility to the findings than if either quantitative or qualitative technique were used alone.

Table 1 Social Network Influence on the Individual Decision to be Tested for HIV by Gender

<table>
<thead>
<tr>
<th></th>
<th>Female (N = 33)</th>
<th>Male (N = 29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influence on HIV testing –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate family</td>
<td>M: 2.89, SD: 2.06</td>
<td>M: 2.73, SD: 1.83</td>
</tr>
<tr>
<td>Influence on HIV testing –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended family</td>
<td>M: 2.36, SD: 1.68</td>
<td>M: 2.14, SD: 1.52</td>
</tr>
<tr>
<td>Influence on HIV testing –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>M: 3.39, SD: 1.77</td>
<td>M: 3.91, SD: 1.44</td>
</tr>
<tr>
<td>Influence on HIV testing –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquaintances</td>
<td>M: 2.93, SD: 1.82</td>
<td>M: 2.50, SD: 1.63</td>
</tr>
</tbody>
</table>

*Note.* Influence was rated on a 5-point scale (1 = Very weak, 2 = Weak, 3 = Strong, 4 = Fairly strong, and 5 = Very strong).

**Discussion and Conclusion**

The study findings indicated that participants engaged in interactions about their daily life and experiences with network members. Friends were perceived to have the greatest influence on the decisions to test for HIV among the 16 to 34 year old participants followed, in order of importance, by immediate family, acquaintances and extended family members. These findings are inconsistent with Granovetter’s “Strength of Weak Ties” theory (1983). The theory emphasized that weak ties provided more information flow of new ideas to network members than strong ties, though the context in this study differs from that which Granovetter’s research was based upon. On the contrary, Weimann (1983) argued that weak ties provide the bridges for the diffusion of innovations across boundaries of social groups, but that decision making is influenced mainly by strong ties in each group.

Close friends empathized easily with each other’s health problems, and they trusted each other with private information about HIV because of their similar social experiences. Friends were easily
accessible to network members because they experienced a common social culture. The influence of friends on network members was woven into the activities of their everyday life. Information among friends was both given and received in a relaxed atmosphere during social interaction.

The results highlighted in this study have important implications for academics, public health organizations and policy-makers. The research contributes to the literature by identifying the effects and influence of social network relationship ties on an individual’s decision to test for HIV. These findings have considerable merit in the fight against HIV and AIDS globally. For policy-makers and health professionals, coming to a more complete understanding of these dynamics will enable them to make institutional decisions and allocate resources to enhance available support, thus encouraging, promoting, and leading to increased testing for HIV.

Though sexual networks provide the routes through which the HIV infection was transmitted, social networks play a major role in transmitting information that influences individuals’ decisions to test for HIV and prevent further infection (Heckathorn, Anthony & Weakliem, 1999).
References


Marks, G., Crepaz, N., & Janssen, R. S. (2006). Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. AIDS Education and Prevention, 20 (10), 1447-1450.


