Determinants of Discriminatory Attitudes Towards People Living with HIV Among Women of Reproductive Age in Nepal: A Trend Analysis From National Surveys

Devaraj Acharya[1]*, Ramesh Adhikari[2], and Komal Badal[3]

[1] Bhairahawa Multiple Campus, Tribhuvan University, Rupandehi, Nepal
[2] Mahendra Ratna Campus, Tribhuvan University, Kathmandu, Nepal
[3] UNAIDS, Kathmandu, Nepal
* Devaraj Acharya, corresponding author. Email: devaraj.acharya@bmc.tu.edu.np
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Abstract

This study examines the effect of education and mass media on discriminatory attitudes towards people living with HIV (PLHIV) among women in Nepal. Data were drawn from the Nepal Demographic and Health Surveys 2006, 2011, and 2016 and covered 36,329 women of reproductive age (WRA) 15–49 years. An example of discriminatory attitude towards PLHIV is not wanting to buy fresh vegetables from a shopkeeper or vendor if an individual knew that the seller had HIV. Discriminatory attitude toward PLHIV has increased significantly over time (27.3% in 2006 to 29.7% in 2011 and 34.2% in 2016) among the WRA. Women who had no education and only primary education were 23% (aOR = 1.23, 95% CI 1.13–1.34) and 46% (aOR = 1.46, 95% CI 1.35–1.58) more likely to be affected by discriminatory attitudes, respectively, than those who had secondary or above education. Similarly, women who did not read newspapers were about five times more likely (aOR = 4.91, 95% CI 2.65–9.10) to develop a discriminatory attitude towards PLHIV than those who read newspapers almost every day. A similar trend was observed in exposure to television as well. This study illuminated the significance of women's education and media exposure in minimizing the discriminatory attitude towards PLHIV. A new intervention is needed since existing interventions could not reduce the discriminatory attitude towards PLHIV.

Keywords

Discriminatory attitudes; HIV/AIDS; Nepal demographic and health survey; trend analysis; women of reproductive age

Introduction

Despite the various interventions on HIV/AIDS, it is still one of the significant public health problems worldwide. Globally, about 690,000 HIV/AIDS-related deaths were recorded in 2019, with about 1.7 million new infections. Over 38 million people live with HIV (PLHIV), and 25.4 million people are under HIV care (United Nations Programme on HIV/AIDS, 2020a). Gender-based violence, discriminatory attitudes towards HIV/AIDS, and inequalities continue to drive the epidemic worldwide. Nepal cannot be an exception to that problem. In 2017, 31,020 people were estimated to live with HIV in Nepal. Among the HIV-positive people, 61% were male and 39% female. By the end of 2018, 32,747 HIV-infected persons were reported (Department of Health Services, 2019).

Along with the commitment to ensure the targets of sustainable development goals concerning HIV/AIDS, a "90-90-90" ambitious global goal by 2020 (Joint United Nations Programme on HIV/AIDS, 2017) was set by the Government of Nepal (GoN). The Joint United Nations Programme on HIV/AIDS "90-90-90" strategy calls for 90% of PLHIV to be diagnosed by 2020, 90% of whom will be on antiretroviral therapy (ART), and 90% of whom will achieve sustained virologic suppression. The test and treat strategy has been implemented since February 2017 (Department of Health Services, 2019). The Government of Nepal has also committed to ensuring 'ending the AIDS epidemic as a public health threat in Nepal by 2030', according to National HIV Strategic Plan 2016–2021 (National Centre for AIDS and STD Control, 2016, p. 3).

Various efforts have increased awareness, offered preventive services, and provided continuous care to people living with HIV by the Government of Nepal (GoN) and other stakeholders. Social stigma and discrimination are still barriers to an effective response to combat HIV/AIDS. These hindrances are persisted even in educated Nepalese people. The National Centre for AIDS and STD Control (NCASC), an apex body under the Ministry of Health and Population, is primarily accountable for controlling HIV/AIDS in Nepal (Department of Health Services, 2019). The NCASC has mainly focused on 'test and treat' services, but social stigma and discrimination towards HIV/AIDS are neglected. Being a member state of the United Nations/UNAIDS, the GoN has committed to ensuring the fast-track commitments and expanded targets to end AIDS by eliminating the HIV-related stigma and discrimination by 2020 (Joint United Nations Programme on HIV/AIDS, 2019).

It was estimated that about 5.8 to 6.7% of the total gross domestic product was spent on health care from 2012/2013 to 2015/2016 in Nepal. Domestic sources manage three-fourths of the total budget, and one-fourth of the budget depends on external donor sources. Consequently, the total amount of spending for HIV/AIDS in Nepal increased from US$ 16.3 million in 2013 to US$ 20 million in 2017 (National Centre for AIDS and STD Control, 2018). A total of 9.8% of the total recurrent health budget, about 90% from the donor source in 2017/2018, was allocated for the national HIV/AIDS control program. Less than 3% of the health budget was allocated for the national health education, information, and communication center (Department of Health Services, 2019). Therefore, there may be an inadequate budget for proper information, education, communication, and counseling for the general people.

People with HIV/AIDS have faced discrimination mainly by individuals, families, communities, healthcare facilities, and media (George, 2019; Mahamboro et al., 2020). Stigma and discrimination lead to discourage individuals from information-seeking behavior and

affect the utilization of health services, including tests identified as major barriers for HIV/AIDS prevention, healthcare, and support, negatively affecting the quality of life and treatment outcomes (Oduenyi et al., 2019; Tran et al., 2019). The community's perception and attitudes of how people with HIV/AIDS behave may influence the utilization of HIV care. Green et al. (2019) claimed that people with perceived stigma are less likely to have health service-seeking behavior. Data from the Asia Pacific region in 2014–2018 showed that one-third (34%) of people aged 15–49 would not buy vegetables from a seller living with HIV/AIDS. Moreover, more than 50% of adults held a discriminatory attitude towards HIV/AIDS in 25 countries (United Nations Programme on HIV/AIDS, 2020b).

Varas-Díaz et al. (2019) highlighted that stigma and discrimination towards HIV/AIDS foster a risky population. Stigma towards people living with HIV (PLHIV) pushes acts of discrimination at almost all levels of society, such as community, healthcare institutions, families, policies, and even public places that influence the quality of life of the PLHIV and continuum care. Another study showed that women living with HIV/AIDS cannot access healthcare services and are also discriminated against by health service providers (Juliastuti et al., 2020). Discriminatory attitude towards HIV/AIDS is also negatively associated with premarital HIV testing (Ahmed & Seid, 2020), fostering delayed diagnosis, chances of an outbreak, and appropriate care. Moreover, laws and regulations should be enacted to protect the victims with the right to live with dignity (Dong et al., 2018). Even healthcare professionals, who had prior knowledge about HIV/AIDS, need intervention (information, education, and communication) for adequate knowledge and awareness and to reduce discriminatory attitudes towards PLHIV (Chew & Cheong, 2014; Manzoor et al., 2019). Haque et al. (2018) indicated that the women who had access to mass media were noticed as more likely to be aware of HIV/AIDS than those who had no access to mass media.

Various donors and development partners have been supporting the HIV/AIDS-related programs, such as Joint United Nations Programme on HIV/AIDS (UNAIDS); United States Agency for International Development (USAID); The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); Family Health International (FHI 360); Family Planning Association of Nepal (FPAN); The World Bank; Global Fund is working in the area of HIV, TB, and Malaria (GFATM) (National Centre for AIDS and STD Control, 2015). Despite the various joint efforts made by the Government of Nepal (GoN), other developmental partners, and donors to combat HIV, discriminatory attitudes towards PLHIV remain rooted in the community (Ministry of Health et al., 2017). However, minimal studies have been found about the determinants of discrimination towards HIV. Hence, the study aimed (i) to assess the determinants of the discriminatory attitudes towards PLHIV regarding education and mass media, and (ii) to investigate the evolution of the discriminatory attitudes towards PLHIV using the national representative data from the Nepal Demographic and Health Surveys (NDHS) 2006, 2011, and 2016.

Conceptual and theoretical background

People living with HIV (PLHIV) perceive themselves psychologically and physically weak. They may not be open due to the fear of discrimination, and then they would be missed from the medical and psycho-social support from the government and other organizations. They would be neglected from adequate care, the information they need, and social and moral support. Moreover, PLHIV are more likely to transfer HIV to others since they do not want to expose themselves as HIV positive. Such practices could worsen the health status of PLHIV,

deteriorate their quality of life, and ultimately contribute to further spreading the disease (Ebrahimi Kalan et al., 2019; George, 2019).

Discrimination is a stigma that limits the potentialities and psycho-social wellbeing of an individual. The research is guided by Social Dominance Theory (SDT) and the theory of change, the Transtheoretical Model (TTM). The SDT indicates human society has a hierarchical social structure such as dominants (who are not infected with HIV) at the top and subordinate groups (HIV infected) at the bottom. The dominant is considered to have positive social value while subordinates retain negative ones (Sidanius & Pratto, 1999). Similarly, according to the TTM, also known as the stages of change, individuals need to follow different stages of the change. If they miss any stage, the behavior change process cannot happen (Hayden, 2019). The study is also guided by the fact that HIV-positive people may perceive themselves as subordinates, and social constructs discriminate against them; hence they might be excluded in the mainstream of the social system.

Materials and methods

We extracted data from three Nepal Demographic and Health Surveys (NDHS 2006, 2011, and 2016). All methodological procedures and study nature were presented in NDHS reports within the respective years (Ministry of Health and Population (MOHP) [Nepal] et al., 2007, 2012; Ministry of Health et al., 2017). The details of survey methods and NDHS reports are publicly available.

Study design

These surveys were retrospective, and the study used a cross-sectional design with pooled NDHS data of 2006, 2011, and 2016. These surveys were national representative at a specific time and population-based, conducted in all five development regions (for NDHS 2006 and 2011) and all seven provinces (for NDHS 2016). Household-based quantitative information was collected from the respondents: household heads, men, and women aged 15–49 years during the survey years.

Study participants

The women of reproductive age (15–49 years) who were aware of HIV/AIDS and wanted to participate in this study were included for data collection. There was no discrimination in terms of caste/race, religion, and geo-belt during sample selection and data collection. A team of supervisors closely monitored all research procedures. Women of the selected age group who did not want to participate or were unaware of HIV/AIDS were excluded from the study.

Population and sample

All households and women aged 15 to 49 years throughout the country were the populations of the study. A multi-stage stratified cluster sampling was used in all NDHSs. The NDHSs used a sampling frame developed by the Central Bureau of Statistics (CBS), Nepal. The NDHS 2006 used a sampling frame provided by the list of census enumeration areas from the

national census 2001. In the same way, the NDHS 2011 used the sampling frame made by CBS based on national census and household survey 2011, and the NDHS 2016 used an updated sampling frame based on census 2011 made by CBS. Enumeration areas (EA) were developed by applying the probability-proportional-to-size strategy in all NDHS. Village Development Committee (VDC) (rural municipality in 2016) was considered as rural, and municipality (urban municipality, sub-metropolitan, and metropolitan in 2016) was regarded as urban area. Wards are the smallest unit of the rural areas where primary sampling unit (PSU) and EA are at urban areas. A two-stage sampling procedure was applied in rural where a three-stage sampling procedure was used in urban areas. Altogether 9,036, 11,353, and 11,473 households were selected for NDHS 2006, 2011, and 2016, respectively. Details of the sampling procedure can be obtained from NDHS reports (Table 1).

Table 1: Sample Households, Eligible, Interviewed, and Heard About HIV by Women Aged 15–49

Year	Sampled households	Households interviewed	Eligible women	Women interviewed	Women heard about HIV/AIDS
2006	9,036	8,707	10,973	10,793	7,832
2011	11,353	10,826	12,918	12,674	10,944
2016	11,473	11,040	13,089	12,862	10,348

Note: NDHS 2006, 2011, 2016

Data collection

The data were collected at households from household members, women of reproductive age, including men adults. Altogether 10,793, 12,674, and 12,862 women were interviewed in NDHS 2006, NDHS 2011, and NDHS 2016, respectively. Among the samples, 7,832, 10,944, and 10,348 women were aware of HIV in NDHS 2006, 2011, and 2016, respectively. We analyzed the data from women who heard about HIV. Therefore, a total of 29,124 responses was analyzed as per the study objective.

Comprehensive training was provided for all field enumerators, including all supervisors. Most of the enumerators had previous experience in data collection. Data collection started in February and was completed in August 2006 by 12 field teams for NDHS 2006; February to June 2011 by 16 field teams for NDHS 2011; and June 2016 to January 2017 by 16 field teams for NDHS 2016. Each team had one supervisor to ensure data consistency, accuracy, and quality control.

Variables

The NDHS was an extensive survey. These NDHSs had six different questionnaires for data collection, such as household's questionnaire, man's questionnaire, and woman's questionnaire. In this study, the dependent variable 'discriminatory attitude towards people living with HIV' was calculated using those who said they would not buy fresh vegetables from a shopkeeper or a vendor if they knew that person had HIV.

As per the study objective, we used the information from households and women aged 15 to 49. Respondents' socio-demographic characteristics such as age (categorized in <25, 25–34, and >34 years), sex, educational status (no education, primary [up to Grade 8], and secondary

or higher), residence setting (rural and urban), ecological belt (mountain, hill, and Terai), provinces the respondents lived, ethnicity, exposure to media (newspaper, radio, and TV), wealth status (First & Second quintiles = poor; Third quintile = middle; and Fourth & Fifth quintiles = rich), working status (currently working a paid job) were the independent variables, and discriminatory attitude towards an HIV infected person was the dependent variable. Mainly, respondents were asked whether they would buy vegetables from a vendor infected with HIV. In the case of media exposure, the women who read newspapers, listened to the radio, and watched television less than once a week considered as low exposure, at least once a week considered as medium exposure, and read/listened/watched these media almost every day considered as high exposure.

Statistical analyses

In the descriptive analysis, we calculated frequency and percentage. We conducted a chi-square test to determine the association between independent and dependent variables. Finally, we performed multivariate analysis to predict the association using logistic regression. Variables that showed significant differences in bivariate analysis (chi-square test) were further analyzed by multivariate analysis (binary logistic regression). Before adjusting the variables in multivariate analysis, we assessed the variables to determine the multi-collinearity and observed no multi-collinearity issues among the variables. The IBM SPSS Statistics (Version 26) was used to analyze the data.

Ethical considerations

The Nepal Demographic and Health Survey protocol was reviewed and approved by Nepal Health Research Council, Kathmandu, and the Macro Institutional Review Board, Maryland, USA.

Results

Respondents' characteristics

Of the 36,329 respondents, four out of ten (39.9%) were less than 25 years, with about 30% from the 25 to 34 years and more than 34 years groups. Forty-two percent of respondents had secondary or higher education, and almost the same percentage (41%) had no formal education. Respondents with no education were in a decreasing trend (53%, 39%, and 34%) whereas the respondents with secondary or higher education were in an increasing trend (30%, 45%, and 50%) in the survey years 2006, 2011, and 2016, respectively. Eighty-six percent of the total respondents were Hindu, and 7% were Buddhist. Respondents from urban areas were in an increasing trend with an average of 41% but a decreasing trend in the rural area with 59%. About two-thirds (65%) of the respondents were currently working, and the working status was decreasing among women of reproductive age (Table 2).

Table 2: Background Characteristics of Women Aged 15–49

Variables and response categories	Demographic and Health Survey Year						Total	
	2006		2011		2016		%	N
	%	N	%	N	%	N		
Age group								
Less than 25 years	41.5	4,479	40.0	5,071	38.3	4,928	39.9	14,478
25–34	28.7	3,101	30.2	3,826	30.2	3,883	29.8	10,810
35 or above	29.8	3,213	29.8	3,777	31.5	4,051	30.4	11,041
Educational level								
No education	52.6	5,677	38.5	4,876	33.8	4,346	41.0	14,899
Primary	17.7	1,908	17.0	2,149	16.2	2,081	16.9	6,138
Secondary or above	29.7	3,208	44.6	5,649	50.0	6,435	42.1	15,292
Religion								
Hindu	86.6	9,348	85.4	10,829	87.1	11,198	86.4	31,375
Buddhist	7.6	821	8.3	1,058	4.5	582	6.8	2,461
Muslim	3.1	330	2.6	331	4.5	580	3.4	1,241
Kirat/Christian	2.7	294	3.6	456	3.9	502	3.4	1,252
Place of residence								
Urban	27.3	2,949	29.2	3,701	64.4	8,279	41.1	14,929
Rural	72.7	7,844	70.8	8,973	35.6	4,583	58.9	21,400
Currently working								
No	27.7	2,986	36.3	4,600	41.4	5,321	35.5	12,907
Yes	72.3	7,807	63.7	8,074	58.6	7,541	64.5	23,422
Wealth index								
Poor	39.0	4,212	37.4	4,742	42.2	5,433	39.6	14,387
Middle	18.3	1,974	18.4	2,336	20.2	2,600	19.0	6,910
Rich	42.7	4,607	44.2	5,596	37.5	4,829	41.4	15,032
Exposure to reading newspapers or magazines								
No exposure	67.5	7,276	62.0	7,860	70.8	9,112	66.8	24,248
Low exposure	21.6	2,330	24.1	3,057	22.2	2,858	22.7	8,245
Moderate exposure	7.3	792	13.9	1,757	6.9	892	9.5	3,441
High Exposure	3.6	389					1.1	389
Exposure to listening to the radio								
No exposure	8.8	953	16.9	2,138	38.9	4,997	22.3	8,088
Low exposure	31.1	3,354	35.7	4,527	32.0	4,116	33.0	11,997
Moderate exposure	23.4	2,521	47.4	6,009	29.1	3,749	33.8	12,279
High Exposure	36.7	3,964					10.9	3,964
Exposure to watching television								
No exposure	28.2	3,044	24.4	3,094	31.4	4,035	28.0	10,173
Low exposure	34.1	3,684	27.3	3,464	22.5	2,898	27.7	10,046
Moderate exposure	11.2	1,205	48.3	6,116	46.1	5,929	36.5	13,250
High Exposure	26.5	2,860					7.9	2,860
Discriminatory attitudes towards people living with HIV								
With discriminatory attitude	21.7	2,344	27.6	3,500	29.3	3,774	26.5	9,618
Else	78.3	8,449	72.4	9,174	70.7	9,088	73.5	26,711
Total	100	10,793	100	12,674	100	12,862	100	36,329

Forty percent of the respondents belonged to poor wealth status, and nearly the same (41%) respondents were rich. A vast majority of the respondents (67%) had no exposure to newspapers, while a nominal 10% and 1% had middle and high exposure to the newspaper, respectively. One-third of the respondents had low and middle levels, and 11% had high-level exposure to the radio. In the same way, more than one-third (37%) of the respondents had middle level (exposure at least once a week) to television. More than one-fourth (27%) of the

respondents held discriminatory attitudes, increasing from 22%, 28%, and 29% in the survey years 2006, 2011, and 2016, respectively.

Association of socio-demographic characteristics and discriminatory attitudes

Of the 36,329 respondents, 29,124 (80.17%) had heard about HIV and possessed discriminatory attitudes were assessed among those who had only heard about HIV. More than one-fourth (27%) of women held a discriminatory attitude towards people living with HIV (PLHIV), which was in an increasing trend accounted for 30% and 34% in 2011 and 2016, respectively ($p < 0.001$). The pooled data showed that the higher the age higher the discriminatory attitude.

Data further showed that women having higher educational status appeared to have a lower-level discriminatory attitude towards PLHIV. Among the respondents, about half (48%) held a discriminatory attitude having no formal education compared to 37% and 18% of those who had primary and secondary or higher-level education, respectively ($p < 0.001$). More than half (51%) of the Muslim women held discriminatory attitudes, followed by 31% of Hindus and 29% of Buddhist women ($p < 0.001$). A high-level discriminatory attitude was noticed among women in rural areas (34%) in comparison to one-fourth who lived in urban areas ($p < 0.001$). One-third (34%) of the currently working women held a discriminatory attitude compared to those who were not currently working ($p < 0.001$) (Table 3).

Table 3: Background Characteristics of Women of Reproductive Age (Among Those Who Ever Heard of HIV) According to Discriminatory Attitudes Towards People Living With HIV

Background characteristics	Category	Discriminatory attitudes towards people living with HIV[a]		Total
		Yes (%)	No (%)	
Year of survey ***	NDHS 2006	27.3	72.7	7,832
	NDHS 2011	29.7	70.3	10,944
	NDHS 2016	34.2	65.8	10,348
Age group ***	Less than 25 years	25.9	74.1	12,092
	25–34	30.0	70.0	8,854
	35 or above	38.4	61.6	8,177
Education ***	No education	46.7	53.3	9,271
	Primary	37.0	63.0	5,178
	Secondary or above	18.3	81.7	14,675
Religion ***	Hindu	30.6	69.4	24,898
	Buddhist	29.1	70.9	2,413
	Muslim	50.5	49.5	667
	Kirat/Christian	24.4	75.6	1,146
Place of residence ***	Urban	25.2	74.8	10,137
	Rural	33.5	66.5	18,987
Currently working ***	No	25.3	74.7	10,708
	Yes	33.8	66.2	18,416
Wealth index ***	Poor	45.4	54.6	9,737
	Middle	34.7	65.3	5,285
	Rich	18.9	81.1	14,102
Exposure to reading newspapers or magazines ***	No exposure	41.2	58.8	17,530
	Low exposure	17.7	82.3	7,779
	Moderate exposure	9.1	90.9	3,444
	High Exposure	4.0	96.0	365

Background characteristics	Category	Discriminatory attitudes towards people living with HIV[a]		Total
		Yes (%)	No (%)	
Exposure of listening to radio ***	No exposure	39.4	60.6	5,686
	Low exposure	32.7	67.3	9,350
	Moderate exposure	27.8	72.2	10,547
	High Exposure	19.9	80.1	3,540
Exposure to watching television***	No exposure	48.8	51.2	6,275
	Low exposure	34.9	65.1	7,787
	Moderate exposure	22.8	77.2	12,425
	High Exposure	12.1	87.9	2,637
Total		30.7	69.3	29,124

*Note: [a]The respondents would not buy fresh vegetables from a shopkeeper or vendor if they knew that person had HIV; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$*

The women with poor wealth status held a high-level discriminatory attitude than those with middle and rich wealth status ($p < 0.001$). In the same way, the women who had no exposure to media such as newspapers, radio, and television held a high-level discriminatory attitude than low, moderate, and high exposure to these media ($p < 0.001$).

Determinants of discriminatory attitudes towards HIV

Bivariate and multivariate analyses showed nearly similar results. Women who participated in NDHS 2016 had more odds of having discriminatory attitudes towards PLHIV than those who participated in NDHS 2006 (aOR = 1.40, 95% CI 1.26–1.57, $p < 0.001$). Women having no education and primary level education were 23% and 46% more likely to have a discriminatory attitude, respectively, towards HIV compared to the women having secondary and higher-level education (aOR = 1.23, 95% CI 1.13–1.34, $p < 0.001$ and aOR = 1.46, 95% CI 1.35–1.58).

Data showed that rural women appeared 1.11 times more likely to have some discriminatory attitude towards people living with HIV than those from urban areas (aOR = 1.11, 95% CI 1.03–1.19, $p < 0.001$). In the same way, women who were currently working had more odds of having discriminatory attitudes than those who had no paid job (aOR = 1.13, 95% CI 1.06–1.21, $p < 0.001$). Data further identified that 'the lower the wealth status, the higher the discriminatory attitude.' Women having poor and middle-level wealth status were noticed to be 61% and 23%, respectively, more likely to have a discriminatory attitude than those who had higher wealth status (aOR = 1.61, 95% CI 1.49–1.74, $p < 0.001$; aOR = 1.23, 95% CI 1.14–1.33, $p < 0.001$) (Table 4).

Table 4: Determinants of Discriminatory Attitudes Towards HIV by Women Aged 15–49 Years[a]

Predicators		Model I			Model II		
		OR	95% CI		aOR	95% CI	
			Lower	Upper		Lower	Upper
Year of Survey	NDHS 2006 (ref.)	1.00			1.00		
	NDHS 2011	1.39***	1.311	1.484	1.054	.953	1.166
	NDHS 2016	1.54***	1.446	1.634	1.40***	1.257	1.570
Age group	Less than 25 years (ref.)				1.00		
	25–34				.904**	.840	.973
	35 or above				1.015	.934	1.102
Education	No education				1.23***	1.133	1.339
	Primary				1.46***	1.346	1.579
	Secondary or above (ref.)				1.00		
Religion	Hindu (ref.)				1.00		
	Buddhist				1.01	.910	1.129
	Muslim				1.59***	1.334	1.912
	Kirat/Christian				0.73***	.623	.852
Place of residence	Urban (ref.)				1.00		
	Rural				1.11***	1.026	1.194
Currently working	No (ref.)				1.00		
	Yes				1.13***	1.062	1.207
Wealth index	Poor				1.61***	1.494	1.736
	Middle				1.23***	1.140	1.330
	Rich (ref.)				1.00		
Exposure to reading newspapers or magazines	No exposure				4.91***	2.647	9.097
	Low exposure				2.89**	1.565	5.368
	Moderate exposure				1.611	.863	3.008
	High exposure (ref.)				1.00		
Exposure to listening to the radio	No exposure				.74***	.642	.846
	Low exposure				.86*	.761	.980
	Moderate exposure				.905	.797	1.028
	High exposure (ref.)				1.00		
Exposure to watching television	No exposure				1.36**	1.141	1.614
	Low exposure				1.31**	1.111	1.554
	Moderate exposure				1.25**	1.056	1.475
	High exposure (ref.)				1.00		
Constant			0.25***			0.40***	
-2 Log-likelihood			40312.1			29409.9	
Cox & Snell R Square			0.06			0.141	

*Note: [a]The respondents would not buy fresh vegetables from a shopkeeper or vendor if they knew that person had HIV; OR = Odds Ratio; aOR = Adjusted Odds Ratio; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$*

Higher exposure to newspapers positively impacted the discriminatory attitude towards PLHIV. The women who had no and low exposure to newspapers or magazines were 4.9 and 2.9 times, respectively, more likely to have a discriminatory attitude compared to those having high exposure to the media (aOR = 4.91, 95% CI 2.65–9.10, $p < 0.001$; aOR = 2.89, 95% CI 1.03–1.19, $p < 0.01$). Interestingly, exposure to the radio had no positive effect on discriminatory attitudes. The women with low exposure and no exposure to radio appeared to be 14 and 26 times less likely to have a discriminatory attitude towards people living with HIV than those with high exposure to the radio. However, exposure to television appeared to be a positive determinant for reducing discriminatory attitudes. Women having no exposure to television appeared to be 36% (aOR = 1.36, 95% CI 1.14–1.61, $p < 0.01$) more likely to have a

discriminatory attitude compared to high exposure to television followed by low exposure (aOR = 1.31, 95% CI 1.11–1.55, $p < 0.01$), and moderate exposure (aOR = 1.25, 95% CI 1.06–1.48, $p < 0.01$) to TV.

Discussion

Data showed that discriminatory attitudes towards people living with HIV (PLHIV) increased from 27% in 2006 to 30% in 2011 and 34% in 2016. Altogether almost three out of 10 women held a discriminatory attitude towards PLHIV despite the various programs implemented to increase awareness about HIV. The higher the age and the higher the discriminatory attitude was noticed throughout the survey years. The people's educational level, the religion followed by the women, place of residence, working status of the women, wealth status, and exposure to the media were significantly associated with discriminatory attitudes towards PLHIV. However, the high educational status, residence, employment, exposure to media (especially television) were significant predictors for having a discriminatory attitude towards PLHIV.

Discriminatory attitudes towards HIV/AIDS

This study showed that nearly one-third of the women of reproductive age held discriminatory attitudes towards PLHIV. Different studies from different places showed various discriminatory attitudes towards HIV/AIDS. Tanzania and Cameroon showed around 35% to 42% of the population having a discriminatory attitude towards PLHIV (Fonner et al., 2019; Nubed & Akoachere, 2016). However, higher proportions of discriminatory attitudes were found in some other countries, such as Bolivia (85%) (Calderón et al., 2015) and the Arabian Peninsula (53%) (Aldhaleei & Bhagavathula, 2020).

However, studies from India found a positive attitude towards PLHIV. One study showed that 68% of participants had mild to moderate stigma towards PLHIV (Limbasiya et al., 2018), while another study showed a high proportion of people with no discriminatory attitude (Hazarika, 2010). In the same way, a high-level discriminatory attitude was found in Pakistan (84%) (Khan et al., 2019) Iran (69%) (Naserirad et al., 2018), while positive attitude was also found in the same countries such as more than half (55%) from Pakistan (Iqbal et al., 2019), and about 15% of the women from Iran (Zarei et al., 2018).

Some studies showed that a vast majority (79%) of the participants from Vietnam (Hoang et al., 2019) and 41% of the participants from Nigerian (Yaya et al., 2019) had no discriminatory attitude and wanted to buy vegetables from shopkeepers who were infected with HIV. It can be concluded that discriminatory attitude persists everywhere, but the magnitude varies in different places, which might cause varying study settings.

Age and discriminatory attitudes

The study showed that the respondents above 35 years of age held high-level discriminatory attitudes than young women. Likewise, in Nigeria, the respondents above 31 years were more likely to buy vegetables from a seller having HIV/AIDS than those below 30 years (Dahlui et al., 2015). The women aged 25–34 years had comparatively positive attitudes (Naserirad et al., 2018). However, in Hong Kong, there was a high-level discriminatory attitude between the

age group (36–50 years) compared to younger age groups (18–35 years) (Lau et al., 2003). On the contrary, in Malaysia, the middle age group (21–41 years) had a high-level discriminatory attitude compared to the younger and senior groups (age less than 21 and more than 41 years) (Wong, 2013). In Pakistan, negative attitudes were noticed more in older women (age more than 37 years) compared to younger (less than 37 years) (Iqbal et al., 2019). Another study showed that accepting attitudes were higher in the women 20–24 years of age than younger (15–19 years) in Uganda (Estifanos et al., 2021). Young people might have more chances to participate in the HIV/AIDS-related awareness programs than seniors; younger people may have a low-level discriminatory attitude towards HIV/AIDS.

Education and discriminatory attitudes

We found that the lower the educational level, the higher the discriminatory attitude. The women with higher education had comparatively positive attitudes towards women living with HIV/AIDS (Naserirad et al., 2018). Highly educated households reported a low level of stigma and discrimination toward PLHIV compared to those with no formal education in Ghana (Tenkorang & Owusu, 2013). Calderón et al. (2015) indicated a higher level of discriminatory attitude in low educational status. Another study by Zainiddinov (2019) showed that women with low education levels had low tolerance. Similar results were observed in Singapore (Aminnuddin, 2019), Pakistan (Khan et al., 2019), Ghana (Kwarteng et al., 2019), and Nigeria (Dahlui et al., 2015, Odimegwu et al., 2018; Yaya et al., 2019).

Alaba (2015) presented different results that people with secondary or higher-level education had a discriminatory attitude towards HIV/AIDS than people with no education. In Ethiopia, high school students showed similar educational status was significantly associated with stigma and discriminatory attitudes towards PLHIV (Kebebew, 2018). These studies showed mixed results concerning discriminatory attitudes towards PLHIV regarding education. However, most of the results supported our findings. People with higher education would have higher chances of getting HIV/AIDS-related messages, so higher-educated individuals might have lower chances of having a discriminatory attitude towards HIV/AIDS.

Residence setting and discriminatory attitudes

The study showed that women who lived in rural areas were more likely to have discriminatory attitudes than urban residents. The same result was noticed in Bolivia that high-level discriminatory attitude (Calderón et al., 2015) towards HIV/AIDS was in rural areas, subsequently in Tajikistan (Zainiddinov, 2019), and Nigeria (Dahlui et al., 2015) and other studies (Iqbal et al., 2019; Lifson et al., 2012; Odimegwu et al., 2018; Yaya et al., 2019; Zarei et al., 2018). However, studies from Zambia (Alaba, 2015) and India (Hazarika, 2010) showed different results that people from urban compared to rural areas had a high-level discriminatory attitude towards HIV/AIDS. The majority of the studies showed that respondents from rural areas had a high-level discriminatory attitude towards HIV/AIDS. Most HIV/AIDS-related programs have been focused primarily on urban areas. Therefore, the participants from rural areas might miss participating in the HIV/AIDS-related interventions, leading to a high-level discriminatory attitude towards HIV/AIDS.

Employment and discriminatory attitudes

During the survey, we found that employed women held a high-level discriminatory attitude than those who were unemployed. A study from Vietnam indicated that the participants' occupation was significantly associated with attitudes towards PLHIV (Hoang et al., 2019). Employed respondents reported that they experienced a low level of stigma and discrimination compared to those unemployed in Ghana (Tenkorang & Owusu, 2013). Unemployed women had more negative attitudes than employed or professional women in Pakistan (Iqbal et al., 2019). These are controversial results with our study due to different study settings.

Wealth status and discriminatory attitudes

We found that poor women had a high-level discriminatory attitude towards PLHIV than rich women. A study from Bolivia showed a higher level of discriminatory attitude towards HIV/AIDS in low economic status (Calderón et al., 2015). Consequently, nearly the same results were found in Nigeria (Dahlui et al., 2015; Odimegwu et al., 2018; Yaya et al., 2019), Pakistan (Iqbal et al., 2019; Khan et al., 2019), and also in Ghana (Tenkorang & Owusu, 2013). Zainiddinov (2019) showed that women with low economic status had low tolerance towards HIV/AIDS. However, Alaba (2015) claimed that people with at least middle-level wealth status had a high-level discriminatory attitude towards HIV/AIDS than the poor.

Most studies showed that the lower the economic status, the higher the discriminatory attitude towards PLHIV. They also supported our findings. People having higher economic status might have chances to be exposed to awareness-related programs from social and mass media, and they may have a lower level of discriminatory attitude towards HIV/AIDS.

Media exposure and discriminatory attitudes

We found that women with high exposure to mass media were less likely to possess a discriminatory attitude towards PLHIV. Hoang et al. (2019) indicated that sources of information about HIV/AIDS were significantly associated with knowledge and attitudes towards PLHIV. The respondents exposed to mass media were almost 5 to 16 times more likely to be aware of knowledge transmission and prevention and HIV/AIDS-related services. Similarly, Haque et al. (2018) found that the women who had access to mass media had higher odds of information and awareness towards HIV/AIDS. These studies indicated that higher exposure to mass media could reduce the negative attitudes and stigma towards PLHIV. Iqbal et al. (2019) noticed overall positive attitudes towards PLHIV with women exposed to mass media. In the same way, women with higher exposure to mass media appeared to have more accepting attitudes towards PLHIV (Estifanos et al., 2021). Exposure to mass media indicates exposure to HIV/AIDS-related information, leading to a lower discriminatory attitude towards HIV/AIDS.

Strengths and limitations of the study

The strength of this study is national representative data from three recent surveys, which provided a wide range of demographic and socioeconomic data. These datasets are only for

quantitative analysis, so the qualitative aspects are left. Due to the secondary dataset, measuring certain variables such as exposure to HIV/AIDS-related information, education, and communication regarding discriminatory attitudes towards PLHIV were not included in the data analysis. Proxy measures of households' assets were assessed to determine the wealth status of families.

Conclusion

Despite the various efforts made by the Government of Nepal, donors, and other development partners, discriminatory attitude towards people living with HIV (PLHIV) has not changed; instead, it has increased, as shown in the latest NDHS (NDHS 2016). It would be better to re-evaluate the existing programs that have been implemented to reduce discrimination towards PLHIV since they could not reduce the discrimination. The study explored low educational status, low wealth status, rural living status, no employment opportunity, poor socioeconomic status, and no exposure to media, especially newspapers and television, which influenced discrimination towards PLHIV. Policymakers and implementing bodies could consider these factors during interventions.

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