

# OBSERVATIONAL STUDY

## Cross-sectional survey on the knowledge, attitudes and practices of Philippine Dermatological Society members related to HIV/AIDS

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**Background:** Human Immunodeficiency Virus (HIV) infection/Acquired Immunodeficiency Syndrome (AIDS) remains a major challenge worldwide. Physicians have a crucial role in the struggle against HIV/AIDS and must be equipped with proper knowledge, attitude and practices (KAP). No study has been done to assess the KAP of dermatologists related to HIV/AIDS.

**Objective:** The study's objective was to determine the KAP of Philippine Dermatological Society (PDS) members related to HIV/AIDS.

**Methods:** A cross-sectional study was done among PDS members from February to November 2017 utilizing a questionnaire consisting of socio-demographic questions and KAP questions related to HIV.

**Results:** Out of 210 participants, 71.43% show good working knowledge, 60.95% show negative attitudes, 55.71% show bad practices related to HIV/AIDS. Members aged 29 to 37 years old, having worked as dermatologists for 1 to 8 years, and having worked in the health care sector for 1 to 8 years have better working knowledge on HIV/AIDS. Although with lesser duration of work as dermatologist, these members have more positive attitudes towards HIV/AIDS. These findings may be attributed to greater exposure to HIV cases and better ability to access information by internet among younger dermatologists. Gender is not significantly associated with KAP related to HIV/AIDS. Practice related to HIV/AIDS is not significantly associated with any demographic variables. Bad working knowledge related to HIV/AIDS is associated with negative attitude and bad practices. This can be attributed to insufficient training in the field of HIV/AIDS.

**Conclusion:** Majority of PDS members show negative attitudes, bad practices, but good working knowledge related to HIV/AIDS.

*Keywords: HIV, AIDS, Knowledge, Attitude, Practice, Philippine Dermatological Society, Dermatologists*

### INTRODUCTION

Human Immunodeficiency Virus (HIV) infection/Acquired Immunodeficiency Syndrome (AIDS) remains one of the major challenges in the public health worldwide.<sup>1</sup> The Joint United Nations Programme on HIV/AIDS (UNAIDS) reported that in 2014, globally there were 36.9 million people living with HIV, 2

million newly infected with HIV and 1.2 million died from AIDS-related illness. In Asia and the Pacific region, 5 million people were living with HIV, 340,000 people were newly infected with HIV and 240,000 people died from AIDS-related illness. Although the spread of HIV worldwide has been halted, noted as decrease of new infection by 35% since 2000, the number of new HIV infections per year is still undesirable.<sup>2</sup> In the Philippines, there have been 25,684 cases of HIV infection since 1984 with 3,157 new cases or about 21 new cases per day, diagnosed from January to May 2015 and 1,214 reported deaths since 1984.<sup>3</sup> These local findings are so alarming with regards to the country's efforts to halt and reverse the extent of HIV and AIDS by 2015.<sup>4</sup>

The sixth Millennium Development Goals (MDGs) of Philippines is to combat HIV/AIDS.<sup>5</sup> In 1992, Philippines National AIDS Council (PNAC) was established as an advisory body to develop policy for controlling AIDS. In 1998, Philippines AIDS Prevention and Control Act was enacted. The Act justified nationwide HIV/AIDS campaign, protection of human rights of HIV-infected persons,

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obliteration of situations aggravating spread of HIV infection and obliged the local governments to provide HIV/AIDS prevention and control.<sup>6</sup> In 2009, United Nations Development Programme (UNDP) along with the local government has started a three-year program to help local government units and to give HIV and AIDS orientation. The program yielded around 100 local AIDS coordinating bodies and 44 local HIV policies.<sup>7</sup> However, statistics from Department of Health showed that newly diagnosed HIV infection are increasing in the Philippines from 1 person/day in 2008 to 4 person/day in 2010, 9 person/day in 2012, 17 person/day in 2014 and 21 person/day in 2015.<sup>3</sup> Philippines is also among the nine countries worldwide with increasing HIV incidence more than 25% since 2001.<sup>4</sup> This phenomenon may be attributed to many factors, namely lowest condom use in Asia, rise in casual sex activity, and misconception about HIV/AIDS.<sup>6</sup>

HIV/AIDS is associated extensively with stigma.<sup>7</sup> Stigma stems from fear of getting the infection and the disease which is still seen as punishment or death. They also interact with and reinforces other preexisting forms of discrimination on gender, sexuality, ethnicity and certain behaviors or activities.<sup>8</sup> They may affect people living with HIV and also their families. They may take form as limitation in education, work, housing, health care, travel, religious activities and lead to verbal or physical violence, isolation or ostracism. They may result in shame or guilt, low self-confidence, avoidance of contact and interactions. More notably, they have serious impact on HIV prevention, support, treatment and care. Individuals will be less willing getting tested for HIV, disclosing HIV status, accessing HIV treatment and practicing safer sex.

Physicians have a crucial role in the struggle against HIV/AIDS as they are in charge of diagnosing, treating and counseling patient with HIV/AIDS competently and compassionately.<sup>8,9</sup> Thus, it is critical that physicians are equipped with proper knowledge, attitude and practices. Several studies on knowledge, attitude and practices (KAP) of physician related to HIV-AIDS have been conducted worldwide.<sup>10-14</sup> Local study in the Philippine setting by Santana, Monzon, Mandel, Hall and Hearst (1992) showed that hospital workers lacked knowledge, showed negative attitudes, and poor infection control practices initially. After conducting an interventional education program, there was improvement in knowledge, attitude and infection control practices. Evaluation conducted 2 months after showed that only improvements in knowledge and infection control practices were retained.<sup>15</sup> Another local study by Melgar, Aplasca, and Monzon (1996) showed that health care workers had sufficient knowledge on the modes of transmission of HIV, but lacked knowledge on pathophysiology and clinical

manifestation of AIDS. Majority of health care workers showed positive attitude towards people affected with HIV/AIDS and good practices with regards to infection control when dealing with HIV/AIDS cases.<sup>16</sup> These existing studies assessed KAP in general physicians and other health care workers, and used different parameters. To the best of the authors' knowledge, no study has been done to assess the KAP of dermatologists related to HIV-AIDS globally and locally in the Philippines.

## OBJECTIVES

The study's general objective was to determine the knowledge, attitudes and practices of Philippine Dermatological Society members related to HIV/AIDS. The study's specific objectives were: 1) To determine the percentage of Philippine Dermatological Society members with good working knowledge on HIV/AIDS, 2) To determine the percentage of Philippine Dermatological Society members that possess positive attitudes on HIV patients, 3) To determine the percentage of Philippine Dermatological Society members that exhibit good practices when dealing with HIV patients.

## METHODS

This was a cross-sectional study for a period of 10 months, from February to November 2017. This study utilized a questionnaire consisting of 4 sociodemographic questions and 21 questions to assess KAP related to HIV. The questionnaire has been validated for its reliability and used in previous study titled "HIV-Related Knowledge, Attitudes, and Practices among Health Care Workers in Montenegro" by Gledovic et. al on 2015.<sup>14</sup> This study used the English version of the questionnaire with modification.

Before being used as investigative tool, the questionnaire was piloted with 10 PDS-certified Dermatologists to test for reliability. The inclusion criteria were: 1) PDS-certified Dermatologist, 2) Aged 18 and above (of legal age), 3) Those who were willing to participate in the study and sign a written informed consent, 4) Those who were attending PDS events such as Continuing Medical Education (CME), postgraduate courses, and conventions.

The computed sample size was 173. This was adjusted based on an additional 20% for possible non-response. The minimum sample size required was 208.

Several outcome measures were evaluated in this study including knowledge, attitude, and practice. Data were analyzed with the appropriate descriptive statistics. Mean and standard deviation were computed for the age and duration of work of the participants. Frequencies and

percentages were computed for categorical variables. Data were encoded using Microsoft Excel.

The study was conducted in compliance with the provisions of the declaration of Helsinki 2000.

## RESULTS

Before being used as investigative tool, the questionnaire was piloted with 10 PDS-certified Dermatologists to test for reliability. Cronbach's alphas for the knowledge, attitude, and practice parts were 0.82, 0.84 and 0.82 respectively.

### Demographic Profiles (Table 1)

A total of 210 PDS members participate in this study. The mean age of the participants is 42.85 ( $\pm$  9.27) years. Majority of the participants are female (89.5%). The mean duration of work as dermatologist is 10.6 ( $\pm$  7.9) years. The mean duration of work in the health care sector is 14.1 ( $\pm$  8.4) years.

**Table 1. Demographic Profiles of the Study Populations (N=210)**

Demographics	No (%) of Participants	Mean $\pm$ SD [Range]
<b>Age (in years)</b>		42.85 $\pm$ 9.27 [29,74]
29-37	74 (35.2%)	
38-46	67 (31.9%)	
47-55	43 (20.5%)	
56-64	22 (10.5%)	
65-75	4 (1.9%)	
<b>Sex</b>		
Male	22 (10.5%)	
Female	188 (89.5%)	
<b>Duration of work as dermatologist (in years)</b>		10.6 $\pm$ 7.9 [1-40]
1-8	99 (47.2%)	
9-16	67 (31.9%)	
17-24	28 (13.3%)	
25-32	13 (6.2%)	
More than 32	3 (1.4%)	
<b>The total duration of work in the health care sector (in years)</b>		14.1 $\pm$ 8.4 [2-48]
1-8	56 (26.7%)	
9-16	90 (42.8%)	
17-24	29 (13.8%)	
25-32	31 (14.8%)	
More than 32	4 (1.9%)	

### Knowledge Related to HIV/AIDS

Majority of the participant show good working knowledge related to HIV/AIDS (71.43%) (Table 2). Out of the 19 questions on the knowledge related to HIV/AIDS, only 5 questions are below 75% in terms of percentage of correct response (Table 3).

**Table 2. Percentage of Good/Positive and Bad/Negative Knowledge, Attitudes, Practices Related to HIV/AIDS (N=210)**

	Good/Positive	Bad/Negative
<b>Knowledge</b>	<b>150 (71.43%)</b>	60 (28.57%)
<b>Attitudes</b>	<b>82 (39.05%)</b>	128 (60.95%)
<b>Practices</b>	<b>93 (44.29%)</b>	117 (55.71%)

### Attitudes Towards HIV/AIDS

Majority of the participants show negative attitudes towards HIV/AIDS (60.95%) (Table 2). Out of the 6 questions on the attitudes towards HIV/AIDS, there are 4 questions below 75% in terms of percentage of positive attitudes (Table 4).

### Practices Related to HIV/AIDS

Majority of the participants show bad practices related to HIV/AIDS (55.71%) (Table 2). Out of the 21 questions on practices related to HIV/AIDS, only 8 questions are below 75% in terms of percentage of good practices (Table 5).

Relationship between demographic profiles, knowledge, attitudes and practices related to HIV/AIDS (Table 6-9).

Chi-square test is used to determine if there is any association between independent variables and dependent outcome. Likelihood ratio test is used if the requirement of Chi-square test is not met (if there are more than 20% expected count less than 5. Statistical significance is tested at 95% confidence level and alpha of 0.05. In this study, demographic profiles of the participants are selected as the independent variables, while their knowledge, attitudes and practices related to HIV/AIDS are the dependent outcome. Statistical analysis is also done to determine the association between knowledge, attitude and practices related to HIV/AIDS.

Gender is not significantly associated with knowledge, attitude or practices related to HIV/AIDS (Table 6-8).

Knowledge related to HIV/AIDS is significantly associated with age, duration of work as dermatologist and the total duration of work in the health care sector. Members with younger age, lesser duration of work as dermatologist and in the health care sector have better working knowledge (Table 6).

Attitude towards HIV/AIDS is significantly associated with duration of work as dermatologist. Members with

**Table 3. Knowledge related to HIV/AIDS (N=210)**

Corresponding Questions	Response			Number (%) reporting the correct responses
Do you consider that when you get in contact with one of the following biological material from the patient you are exposed to the danger of HIV infection:	No	Yes	I Don't Know	
Sweat	185	18	7	(No) 88.10
Blood	6	204	0	(Yes) 97.14
Saliva/tears	146	56	8	<b>(No) 69.52</b>
Urine	164	33	13	(No)78.10
Stool	170	26	14	(No) 80.95
Vaginal secretions or sperm	11	198	1	(Yes) 94.29
The risk of HIV infection for health care workers exists in the case:	No	Yes	I Don't Know	
When infectious material from the patient splashes in the eye	33	169	8	(Yes) 80.48
When infectious material gets on the open/injured skin	6	199	5	(Yes) 94.76
Of accident with contaminated needle or cut on sharp object	8	197	5	(Yes) 93.81
The highest risk from HIV infection for health care workers is:	Contact with the skin of the patient	Contact with linen, underwear and paper towels used by the patient	Contact with blood and body fluids contaminated with the blood of the patient	(Contact with blood and body fluids contaminated with the blood of the patient) 90.00
	14	7	189	
The risk of getting the infection after accidental stick on a needle contaminated with the blood of infected patient is : for HIV infection	<1%	5%	20%	97%
	85	51	27	47
				<b>(&lt;1%) 40.48</b>
Do you consider that in case of accidental needle stick and/or exposure to the blood of the patient you need to	No	Yes	I Don't Know	
Contact local epidemiological service	32	156	22	<b>(Yes) 74.29</b>
Conduct serological testing	15	179	16	(Yes) 85.24
Ask for the information about HIV status of the patient	12	181	17	(Yes) 86.19
Are HIV infection and AIDS two terms for the same occurrence?	No	Yes		
	175	35	(No) 83.33	
A "window" period is:	No	Yes	I Don't Know	
Period on the beginning of HIV infection	138	58	14	<b>(No) 65.71</b>
Period during which a serological test is negative, but the person is infected with HIV	16	182	12	(Yes) 86.67
Period during which a person has clinical signs of AIDS	174	17	19	(No) 82.86
Incubation period	112	76	22	<b>(No) 53.33</b>

**Table 4. Attitudes towards HIV/AIDS (N=210)**

Questions	Response					Number (%) reporting the positive attitudes
	Strongly Agree (SA)	Agree (A)	Neither agree nor disagree (N)	Disagree (D)	Strongly Disagree (SD)	
Do you consider that all hospitalized patients should be tested for HIV?	14	25	20	88	63	<b>(D/SD) 71.90</b>
Is HIV positive patient obligated to announce his status to a health worker who treats him?	65	49	8	34	54	<b>(D/SD) 41.90</b>
Do you consider that you should be familiar with the diagnosis of a patient suffering from AIDS, so that you can take appropriate protection measures?	77	57	7	29	40	<b>(D/SD) 32.86</b>
Do health workers have right to refuse to treat HIV positive patients?	12	49	32	55	62	<b>(D/SD) 55.71</b>
If you would be regularly supplied with adequate protective devices would you use them in your daily work?	87	90	12	12	9	(A/SA) 84.29
Do you consider that you need additional education?	87	93	13	10	7	(A/SA) 85.71

**Table 5. Practices related to HIV/AIDS (N=210)**

Questions	Response			Number (%) reporting the good practice
How many interventions in which you come in contact with blood and body fluids of patients you perform on your working place in average:	0	More than 0	Mean ± SD [Range]	
a. Daily	78	132		<b>(0) 37.14</b>
b. Weekly	40	190		<b>(0) 19.05</b>
Do you have available written instruction on general protection measures need to be taken against infection, when working with patients and/or their biological material at your workplace?	No	Yes	I Don't Know	
	111	83	16	<b>(Yes) 39.52</b>
Do you conduct necessary precautionary measures to protect yourself against infection when working with each patient?	No	Yes		
	13	197		(Yes) 93.81
During interventions where contact with the blood of the patient or his body fluids is possible, do you wear:	Never	Rare	Always	Only when I know that the patient is contagious
a) gloves	3	2	192	13 (Always) 91.43
b) double gloves	16	42	56	96 <b>(Always) 26.67</b>
c) mask	5	26	176	3 (Always) 83.81
d) protective goggles	42	52	65	51 <b>(Always) 30.95</b>
Where do you dispose the medical waste (used syringes, needles, broken test tubes, etc.)?	Never	Rare	Often	Always
a) with the other trash in the basket and/or plastic bags	174	21	4	11 (Never) 82.86
b) in the solid walls vessels (containers)	6	7	21	176 (Always) 83.81
c) other (write in)	None: 197 Infectious sharp container: 13			(None/sharp container) 100
How many times has something from the following specified below happened to you at your working place:	0	More than 0	Mean ± SD [Range]	
To have accidental needle stick				
last year	166	44		(0) 79.05
during whole work	150	60		<b>(0) 71.43</b>
To have accident cutting with a sharp object (scalpel, scissors)				
last year	196	14		(0) 93.33
during whole work	185	25		(0) 88.10
To be in contact with blood of the patient through the skin				
last year	173	37		(0) 82.38
during whole work	167	43		(0) 79.52
To have patient's blood splashed in the eye on in other mucosa				
last year	194	16		(0) 92.38
during whole work	192	18		(0) 91.47
Do you have available written instruction about post exposure prophylaxis of HIV infection at your workplace?	No	Yes	I Don't Know	
	150	36	24	<b>(Yes) 17.14</b>
Have you had any training in the field of HIV/AIDS so far?	No	Yes, in the last year	Yes, in the last 5 years	
	79	36	95	<b>(Yes) 62.38</b>

**Table 6. Association between Demographic Profiles and Knowledge Related to HIV/AIDS**

Demographic Profiles	Good Working Knowledge		Bad Working Knowledge		Chi-square / Likelihood ratio (p-value) <sup>a</sup>	Odds Ratio <sup>b</sup>	95% CI	p-value
	N	%	N	%				
<b>Gender</b>								
Male	19	12.67	3	5.00	2.686 <sup>a</sup> (0.101)	1.00	0.784 – 9.683	0.114
Female	131	87.33	57	95.00				
<b>Age</b>								
29 to 37	64	42.67	10	16.67	<b>27.948<sup>a</sup> (0.000)</b>	<b>0.052</b>	<b>0.005 - 0.551</b>	<b>0.014</b>
38 to 46	51	34.00	16	26.67		0.105	0.010 - 1.077	0.058
47 to 55	26	17.33	17	28.33		0.218	0.021 - 2.272	0.203
56 to 64	8	5.33	14	23.33		0.583	0.052 - 6.587	0.663
65 to 74	1	0.67	3	5.00		1.00		
<b>Duration of work as dermatologist (in years)</b>								
1 to 8	83	55.33	16	26.67	<b>30.438<sup>a</sup> (0.000)</b>	<b>3.965E-009</b>	<b>1.876E-009 - 8.381E-009</b>	<b>&lt;0.000</b>
9 to 16	47	31.33	20	33.33		<b>8.753E-009</b>	<b>8.753E-009 - 8.753E-009</b>	<b>&lt;0.000</b>
17 to 24	17	11.33	11	18.33		<b>1.331E-008</b>	<b>5.296E-008 - 3.344E-008</b>	<b>&lt;0.000</b>
25 to 32	3	2.00	10	16.67		<b>6.856E-008</b>	<b>1.704E-008 - 2.759E-007</b>	<b>&lt;0.000</b>
More than 32	0	0.00	3	5.00		1.00		
<b>The total duration of work in the health care sector (in years)</b>								
1 to 8	49	32.67	7	11.67	<b>38.259<sup>a</sup> (0.000)</b>	0.048	0.004 - 0.524	0.341
9 to 16	67	44.67	23	38.33		0.114	0.011 - 1.155	0.114
17 to 24	24	16.00	5	8.33		<b>0.069</b>	<b>0.006 - 0.813</b>	<b>0.034</b>
25 to 32	9	6.00	22	36.67		0.815	0.074 - 8.913	0.867
More than 32	1	0.67	3	5.00		1.00		

<sup>a</sup>Likelihood ratio test is used if there are more than 20% expected count less than 5

<sup>b</sup>OR with outcome of bad working knowledge

lesser duration of work as dermatologist have more positive attitudes towards HIV/AIDS (Table 7).

Practices related to HIV/AIDS are not significantly associated with any of the demographic variables (Table 8).

Knowledge, attitude and practices related to HIV/AIDS are found to be significantly associated with one another. Bad working knowledge is associated with negative attitudes and bad practices (Table 9).

## DISCUSSION

This is the first study done to assess the knowledge, attitude and practices related to HIV/AIDS among dermatologists, specifically PDS members. Majority of the participating dermatologists have good working knowledge. However, most of them still possess negative attitudes and bad practices related to HIV/AIDS. Previous studies among health care workers on this matter showed inconsistent results. Studies conducted in several other countries and a local study by Santana et al. showed an overall lack of knowledge, undesirable attitude and poor

practices related to HIV/AIDS.<sup>11,12,14,15</sup> A study conducted in the Philippines by Melgar et al. revealed a high level of knowledge and positive attitudes related to HIV among healthcare workers.<sup>16</sup>

Majority of PDS members have good knowledge regarding mode of transmission, post-exposure prophylaxis (PEP), definitions of HIV, AIDS and window period. With regards to mode of transmission, the 2016 U.S. Public Health Service Guidelines stated that saliva and tears, together with feces, urine, nasal secretions, sputum, vomitus and sweat, are not regarded as potentially infectious unless visibly bloody. Also, risk of HIV transmission after percutaneous exposure was approximated to be at 0.2% to 0.5% with an average of 0.3%.<sup>17</sup> There is a substantial number of dermatologists (31%) who consider contact with saliva and tears of patient as a potential risk for HIV transmission. Majority of the participants answer that the risk of getting HIV infection after accidental needle-stick injury is 5%, 20% and 97%. The actual risk is only less than 1%. Similar findings were also seen among health care workers in Montenegro and in rural India and could be a reason for reluctance to participate in invasive procedures.<sup>14,18</sup> Dissemination of

**Table 7. Association between Demographic Profiles and Attitudes Towards HIV/AIDS**

Demographic Profiles	Positive Attitude N	Positive Attitude %	Negative Attitude N	Negative Attitude %	Chi-square / Likelihood ratio (p- value) <sup>a</sup>	Odds Ratio <sup>b</sup>	95% CI	p-value
<b>Gender</b>								
Male	11	13.41	11	8.59	1.239 <sup>a</sup> (0.266)	1.00	0.679-3.998	0.269
Female	71	86.59	117	91.41		1.648		
<b>Age</b>								
29 to 37	27	32.93	47	36.72	6.644 <sup>a</sup> (0.156)	2.018E-008	7.504E-009 – 5.427E-008	<0.000
38 to 46	32	39.02	35	27.34		1.268E-008	4.701E-009 – 9.342E-008	<0.000
47 to 55	15	18.29	28	21.88		2.164E-008	6.317E-009 – 6.317E-008	<0.000
56 to 64	8	9.76	14	10.94		2.029E-008	2.029E-008 – 2.029E-008	<0.000
65 to 74	0	0	4	3.13		1.00		
<b>Duration of work as dermatologist (in years)</b>								
1 to 8	36	43.90	63	49.22	10.651 <sup>a</sup> (0.031)	5.515E-008	2.937E-008 – 1.036E-007	<0.000
9 to 16	34	41.46	33	25.78		3.059E-008	3.059E-008 – 3.059E-008	<0.000
17 to 24	10	12.20	18	14.06		5.672E-008	2.285E-008 – 1.408E-007	<0.000
25 to 32	2	2.44	11	8.60		1.733E-008	3.567E-008 – 8.422E-007	<0.000
More than 32	0	0.00	3	2.34		1.00		
<b>The total duration of work in the health care sector (in years)</b>								
1 to 8	25	30.49	31	24.22	9.059 <sup>a</sup> (0.060)	3.907E-008	1.992E-008 – 7.665E-008	<0.000
9 to 16	37	45.12	53	41.41		4.514E-008	4.514E-008 – 9.017E-008	<0.000
17 to 24	13	15.85	16	12.50		3.878E-008	1.668E-008 – 9.017E-007	<0.000
25 to 32	7	8.54	24	18.75		1.08E-007	4.217E-008 – 2.768E-007	<0.000
More than 32	0	0.00	4	3.13		1.00		

<sup>a</sup>Likelihood ratio test is used if there are more than 20% expected count less than 5

<sup>b</sup>OR with outcome of negative attitude

correct information and practice of universal precautions could improve this unwillingness.<sup>18</sup> With regards to the definition of window period of HIV infection, some dermatologists still consider that window period is the same as incubation period and/or period on the beginning of HIV infection. Window period is defined as “period of time between initial HIV infection and the development of detectable HIV antibodies”.<sup>17</sup> Incubation period is defined as “the time it takes from infection to overt disease” which begins from HIV seroconversion and ends with the appearance of one of AIDS-defining clinical condition.<sup>18</sup> This misconception could result in misinterpretation of diagnostic tests by dermatologists, leading to under-diagnosis or over-diagnosis of HIV infection.

Majority of PDS members show negative attitudes towards HIV/AIDS. A considerable number of dermatologists considers that all hospitalized patients should be tested for HIV, and majority believe that they should know the diagnosis of HIV so that they can do appropriate protection and agree that HIV positive patients are obligated to inform their status to their health care providers. In Montenegro, similar attitudes were shared by 64.7%, 82%, and 88.9% of health care workers, respectively.<sup>14</sup> In rural India, nearly 95% of health care workers felt that HIV testing should be routinely employed for all obstetric and surgical patients. It was probably done to identify patients which need special precautions. However, the risk of occupational exposure were not decreased by routine HIV testing and some recently



**Table 8. Association between Demographic Profiles and Practices Related to HIV/AIDS**

Demographic Profiles	Good Practice		Bad Practice		Chi-square / Likelihood ratio (p- value) <sup>a</sup>	Odds Ratio <sup>b</sup>	95% CI	p-value
	N	%	N	%				
<b>Gender</b>								
Male	11	11.83	11	9.40	0.325 <sup>a</sup> (0.568)	1.00	0.534 - 3.129	0.569
Female	82	88.17	106	90.60		1.293		
<b>Age</b>								
29 to 37	31	33.33	43	36.75	2.407 <sup>a</sup> (0.661)	1.387	0.185 - 10.390	0.750
38 to 46	33	35.48	34	29.06		1.030	0.137 - 7.748	0.977
47 to 55	20	21.51	23	19.66		1.150	0.148 - 8.929	0.894
56 to 64	7	7.53	15	12.82		2.143	0.248 - 18.498	0.488
65 to 74	2	2.15	2	1.71		1.00		
<b>Duration of work as dermatologist (in years)</b>								
1 to 8	42	45.16	57	48.72	6.230 <sup>a</sup> (0.183)	0.679	0.060 - 7.733	0.755
9 to 16	37	39.78	30	25.64		0.405	0.084 - 13.226	0.470
17 to 24	9	9.68	19	16.24		1.056	0.084 - 13.226	0.967
25 to 32	4	4.30	9	7.69		1.125	0.078 - 16.307	0.931
More than 32	1	1.08	2	1.71		1.00		
<b>The total duration of work in the health care sector (in years)</b>								
1 to 8	23	24.73	33	28.21	4.438 <sup>a</sup> (0.350)	0.478	0.047 - 4.891	0.534
9 to 16	46	49.46	44	37.61		0.319	0.032 - 3.182	0.330
17 to 24	13	13.98	16	13.68		0.410	0.038 - 4.426	0.463
25 to 32	10	10.75	21	17.95		0.700	0.064 - 7.603	0.769
More than 32	1	1.08	3	2.56		1.00		

<sup>a</sup>Likelihood ratio test is used if there are more than 20% expected count less than 5

<sup>b</sup>OR with outcome of bad practice

**Table 9. Association between Knowledge, Attitudes and Practices Related to HIV/AIDS**

	Positive Attitude		Negative Attitude		Chi-square / Likelihood ratio (p- value) <sup>a</sup>	Odds Ratio <sup>b</sup>	95% CI	p-value
	N	%	N	%				
<b>Knowledge</b>								
Good	69	84.15	81	63.28	10.662 (0.001)	1.00	1.540 - 6.159	0.001
Bad	13	15.85	47	36.72		3.080		
<b>Practices</b>								
	Good Practice		Bad Practice					
	N	%	N	%				
<b>Knowledge</b>								
Good	74	79.57	76	64.96	5.421 (0.020)	1.00	1.118 - 3.950	0.021
Bad	19	20.43	41	35.04		2.101		
<b>Attitudes</b>								
Positive	63	67.74	19	16.24	57.746 (0.000)	1.00	5.620 - 20.874	0.000
Negative	30	32.26	98	83.76		10.832		

<sup>a</sup>Likelihood ratio test is used if there are more than 20% expected count less than 5

<sup>b</sup>OR with outcome of bad working knowledge, negative attitude or bad practice

infected patients may be on their window period. Furthermore, 97.2% of health care workers believed that extra infection control precautions were necessary while caring for HIV patient, which was contradictory to the definition of universal precaution.<sup>18</sup> A high number of participating dermatologists also agrees that health care workers have right to refuse to treat HIV positive patients, which is a form of stigma. Similar results were also seen in Montenegro (6.2%), India (15-25%), and Kuwait (83%).<sup>11,14,18</sup>

Majority of the PDS members show rather risky practices related to HIV/AIDS. More than 80% of dermatologists are exposed weekly to blood or body fluids of patients while doing procedures, and moreover nearly two thirds of them are exposed daily. Albeit low, occupational accidents such as needle-stick injury, cutting with a sharp object, contact with blood of patient, and blood splash in the eye and mucosa were still encountered in the previous years. Majority of the dermatologists do not have written instructions on general precautions and

post-exposure prophylaxis of HIV infections. However, most of them state that they conduct necessary precautionary measures. While most dermatologists are always equipped with gloves and mask, less than a third of them wear double gloves and mask during these procedures. Double gloving conferred significantly higher protection than single gloving, as most glove perforations went unnoticeable during surgical procedures.<sup>20</sup> Despite small risk of HIV transmission through accidental mucous membrane exposure (0.1%), at least one facial blood splash was noted in 33% of dermatologic surgery. Use of wrap-around protective glasses protected against exposure of blood or body fluids.<sup>21,22</sup>

Among the demographic profiles of the participating PDS members, age, duration of work as dermatologist and total duration of work in the health care sector are significantly associated with knowledge related to HIV/AIDS. Members with younger age, lesser duration of work as dermatologist and in the health care sector have better working knowledge on HIV/AIDS. Members aged 29 to 37 years old, having worked as dermatologist for 1 to 8 years, and having worked in the health care sector for 1 to 8 years have better working knowledge on HIV/AIDS. Although with lesser duration of work as dermatologist, these members have more positive attitudes towards HIV/AIDS. Similar findings were also observed in a 2004 study in Barbados in which health care workers who graduated in later years had higher level of knowledge and positive attitudes related to HIV/AIDS. This finding was attributed to the fact that HIV/AIDS was not likely to be included in medical school curriculum in earlier years.<sup>12</sup> HIV/AIDS is a part of the curriculum of PDS training institution. In our local settings, this finding may be attributed to the number of HIV cases seen by the dermatologists and access to internet as a source of information on HIV/AIDS. Despite their lesser duration of work as dermatologist, this group of PDS members may be seeing more number of HIV cases. In Barbados, physicians who graduated in the later years were also observed to be seeing higher number of HIV cases compared to those who graduated in earlier years, hence their better knowledge related to HIV.<sup>12</sup> Better ability to access the internet as a source of information on HIV/AIDS may also contribute to better knowledge among younger dermatologists.

Gender is not found to be significantly associated with the knowledge, attitude and practices of dermatologists related to HIV/AIDS. These were also observed among Kuwaiti family physician.<sup>11</sup>

Knowledge, attitude and practices related to HIV/AIDS are found to be significantly associated with each other. Bad working knowledge is associated with negative attitudes and bad practices. There are 29% of PDS members who have bad working knowledge. These can be

attributed to insufficient training in the field of HIV/AIDS, which are observed in a similar number of PDS members (38%). Lack of knowledge related to transmission of HIV and universal precaution could also lead to overestimation of risk and worsen the fear of contracting the infection.<sup>14,18</sup> These insufficient knowledge and negative attitudes are also observed in our study. On the other hand, knowledge on risk perception is associated positively with use of universal precaution.<sup>23</sup>

Previous studies also identified other factors which could affect the level of knowledge, attitude and practices related to HIV/AIDS. These factors may include working in AIDS center<sup>10</sup>, previous HIV/AIDS caseload, religion and moral beliefs<sup>12</sup>, accessibility to information, and availability of universal precautions equipment.<sup>13</sup>

### Limitations

Given that the questionnaire was self-administered, the limitations of this study include inaccurate recall of the number of exposure and tendency to give more desirable answers. These limitations were minimized by providing adequate time in getting informed consent and reaffirming the confidentiality of the study.

### CONCLUSION

In This study shows that gender is not significantly associated with knowledge, attitude or practices related to HIV/AIDS. Members with younger age, lesser duration of work as dermatologist and in the health care sector have better working knowledge on HIV/AIDS. Members with age between 29 and 37 years old, having worked as dermatologist for 1 to 8 years, and having worked in the health care sector for 1 to 8 years have better working knowledge on HIV/AIDS. Although with lesser duration of work as dermatologist, these members have more positive attitudes towards HIV/AIDS. Practice related to HIV/AIDS is not significantly associated with any of the demographic variables. Bad working knowledge is associated with negative attitudes and bad practices. Despite these significant associations, majority of PDS members show negative attitudes and bad practices, but good working knowledge related to HIV/AIDS.

### Recommendations

Based on the results of this study, the following recommendation can be made: 1) To conduct further research which includes more demographic profiles and determine their association with knowledge, attitude and practices related to HIV/AIDS; 2) To conduct more training or workshops in the field of HIV/AIDS for PDS members

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