

## **Change of attitude in Spanish professional dentists as regards risk of HIV/Aids infection**

### **Cambio actitudinal en dentistas españoles ante el riesgo de VIH**

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#### **Abstract**

Objective: The aim is to estimate the changes in attitude arising after eighteen years in the perception of the risk of contracting HIV/Aids among Spanish dental health workers and the general public. Design: We performed a cross-sectional comparative investigation with the data collected from a survey in 1996 and 2014. Method: two experimental random samples have been selected which make up both groups of dental health workers and general population. Participants were provided with the Global AIDS Attitudes questionnaire and form a B Eysenck Personality Inventory. The data was subsequently subjected to statistical analysis in order to find any significant differences in both years' samples. Results: The general public of 1996 perceived greater risk in situations like "surgery with risk for the patient" and "donating blood" than dentists. That trend was inverted in 2014. In 1996, male dentists perceived more risk in general terms than women, but in 2014 women assigned more risk (mainly in dental surgery or sharing a syringe). According to age, only in 1996 data showed that dentists over forty perceived more risk than those under twenty-five. Conclusion: After 18 years, positive changes in the general public's attitudes have taken place but dental health workers have increased their perception of risk of contagion. In the 1996 survey male dentists perceived greater risk while in 2014 it was women who perceived this.

#### **Key Words**

Dental health workers, dentists, HIV/AIDS, attitude, perception, risk, infection.

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## Resumen

**Objetivo:** estimar los cambios actitudinales producidos en los dentistas españoles y la población general ante la percepción de riesgo de contagio del VIH/Sida dieciocho años después. **Diseño:** se ha realizado un estudio comparativo transversal de los datos obtenidos por una encuesta realizada en 1996 y otra en el año 2014. **Método:** se han seleccionado dos muestras aleatorias experimentales que conforman los grupos de profesionales dentistas y población general. A los participantes se les ha administrado el Cuestionario Global de Actitudes del SIDA y la forma B del Inventario de Personalidad de Eysenck. Posteriormente los resultados se han sometido a análisis estadístico para comprobar si existen diferencias significativas entre los resultados de ambos años. **Resultados:** En 1996 la Población General (PG) percibió más riesgo de contagio que los Dentistas (DT) en la “intervención quirúrgica con riesgo para el paciente” y en la donación de sangre y en el año 2014 son los dentistas los que perciben mayor riesgo. Según sexo, en 1996 son los dentistas varones los que perciben más riesgo, pero en 2014 son las mujeres las que lo perciben (en intervención dental o quirúrgica o al compartir jeringuilla). En relación con la edad solo en 1996 se encontró más percepción de riesgo en dentista mayores de 40 años y menores de 25 años. **Conclusiones:** Tras 18 años se ha producido un cambio favorable en la percepción de riesgo de contagio en la población general pero los dentistas han aumentado su percepción de riesgo de contagio. En la encuesta de 1996 los hombres dentistas percibían más riesgo y en el 2014 las mujeres.

## Palabras Clave

Odonto-estomatólogos, dentistas, VIH/SIDA, actitud, percepción, riesgo, contagio.

## INTRODUCTION

Stigma and discrimination associated with HIV remain as the main obstacles to an effective response to HIV (ONUSIDA, 2013, 2015) and, from the Public Health point of view, prejudices among infectious diseases and misconceptions about HIV transmission routes cause inequality in the access to public health care services (Dávila, 2007; Uribe, 2011). In fact, most studies agree that the stigmatizing nature of HIV/AIDS and the fear of catching the virus are dentists' most reported

statements to reject these patients (Horsman, 1995). Negative attitudes towards people living with Aids (PWA) in the field of health care include isolation of patients (Dávila, 2011), poor knowledge about this disease and its routes of transmission (Valdez, 2012), poor knowledge about management of seropositive patients (Fotedar, 2013), a high fear of acquiring the disease, fear of transmission during the performance of high-risk health practices (Välimäki, 1998), moral and social prejudices against HIV disease (Uribe, 2011) or the dentists' fear that their family might



be exposed to the virus (Maupomé, 2008). These facts may lead PWA to hide their serological status which causes PWA to miss out on early diagnosis and it affects care-quality. This also prevents PWA from receiving accurate treatment (Aisien, 2005; Reis, 2005; Dávila, 2007 y 2008; Uribe, 2011; Jeevitha, 2013; Aguilera, 2014).

In 1996, and later in 2014, we conducted an investigation which sought to study the dentists' attitudes related to AIDS depending on the frequency of attendance of these patients and according to demographic variables. because as important as knowing the risks of personnel dentists (Aisien, 2005; Jiménez, 2007) it is to know the evolution or differences in risk perception of health care workers in order to test whether there have been significant changes over time, correct variations, act to modify those that undermine the welfare of these patients and improve the social integration of PWA. This investigation sought to study the perception of risk presented of professional dentists to certain behaviors or situations that could spread the HIV virus.

## MATERIAL AND METHOD

We have performed a cross-sectional comparative study on Attitudes and dentists' perception of the risk of contracting HIV/Aids in 1996 and later in 2014.

In 1996, the sample was formed by 75 professional dentists (DT) of Valencia (Spain) to whom their voluntary cooperation was sought. The sample of general population (GP) was formed by 112 subjects who attended a medical center. In 2014, the study was made with the cooperation of 58 DT at the Dental Clinic of the University of Valencia, prior authorization and formal request of collaboration. The sample of GP was formed by 74 randomly selected people who were

contacted personally and who participated voluntarily. In both years, dentist professionals and general population were informed and assured confidentiality and anonymity of responses. (Table 1)

Data collection was performed using the Global AIDS Attitudes Questionnaire (1993) prepared by FASE team on WHO recommendations. This self-administered questionnaire consists of 51 Likert-type questions divided into three sections: *Risk perception* consists of 32 items with six response options where 1 is "no risk" and 6 "very high risk", *Ability to speak on issues related to VIH* consists of 6 items with five response options where 1 is "not capable" and 5 is "fully capable" and *Opinion* composed of 13 items with five response options where 1 is "completely agree" and 5 "completely disagree". Along the B form of the Spanish adaptation of Eysenck Personality Inventory produced by Sánchez, M. (1972) was also administered. It is composed of 57 dichotomous items (yes/no) that assess personality traits as neuroticism, extroversion and a sincerity scale. In 1996 only the sincerity scale (Scale L) was administered and in 2014 it was fully-administered.

Only perception of risk items were used for this paper related to demographic data such as: gender, age, educational level, employment status and frequency of HIV patient attendance (only DT). (Table 2)

In 1996, data were collected and analyzed using Statistical Package SPSS 6.0. It was used T-test for comparison of means as parametric tests; considering Levene test for equal variances. The test U Mann-Whitney was used as a non-parametric test. Data collected in 2014 was analyzed using Statistical Package SPSS 20.0. Tests U Mann-Whitney and Kruskal Wallis were used as non-parametric tests. R Pearson's test was used for correlations. A lower significance of 0.05 was used in all cases.



**Table 1.** Demographic characteristics of respondents

		General Population 1996 (N=112)		General Population 2014 (N=74)		Dentist 1996 (N=75)		Dentist 2014 (N=58)	
		N	%	N	%	N	%	N	%
Gender	Men	42	37,5%	28	37,8%	49	65,3%	18	31%
	Women	70	62,5%	46	62,2%	26	34,7%	40	69%
Age	under 25 years old	35	31,3%	23	31,1%	13	17,3%	20	34,5%
	From 26 to 30 years old	8	7,1%	10	13,5%	6	8%	14	24,1%
	from 31 to 40 years old	24	21,4%	5	6,8%	47	62,7%	11	19%
	over 40 years old	45	40,2%	36	48,6%	9	12%	13	22,4%
Employment status	Self-employed	5	4,5%	4	5,4%	-	-	19	32,8%
	Unemployed	49	43,8%	13	17,6%	-	-	7	12,1%
	Fixed employee	34	30,4%	33	44,6%	-	-	7	12,1%
	Casual employee	12	10,7%	8	10,8%	-	-	12	20,7%
	other	12	10,7%	16	21,6%	-	-	13	22,4%
Educational level	primary	43	38,4%	0	0%	0%	0%	0	0%
	Secondary/bachelor	30	26,8%	7	9,5%	0%	0%	0	0%
	Vocational training	8	7,1%	8	10,8%	0%	0%	0	0%
	graduate	31	27,7%	59	79,8%	100%	100%	58	100%
Employment status-dentist	Self-employed	-	-	-	-	53	70,7%	18	41,9%
	Public health service	-	-	-	-	6	8%	4	9,3%
	Public and private health service	-	-	-	-	16	21,3%	21	48,8%
Frequency treatment HIV/Aids patients	Almost never	-	-	-	-	15	20%	23	46,9%
	Frequent	-	-	-	-	32	42,7%	24	49%
	Regular	-	-	-	-	28	37,3%	2	4,1%

N= number of subjects

% = percentage



**Table 2.** Results of the mean comparison between general population and dentists. Significant variables

SIGNIFICANT VARIABLES OF PERCEPTION OF RISK	SAMPLE FROM 1996					Sig.
	Dentist	Dentist SD	General Population	General Population SD	t	
Sharing a cup	1,96	1,19	2,41	1,46	-2,31	,022*
Handshaking	1,13	0,44	1,40	0,91	-2,67	,008**
Sharing a pool	1,28	0,73	1,86	1,2	-4,09	,000**
Sharing a cigarette	2,07	1,19	2,59	1,61	-2,59	,01*
Sharing a toilet	1,88	1,31	2,55	1,59	-3,16	,002**
Accidental pick with a used needle without gloves	5,13	1,03	5,49	0,94	-2,27	,025*
Accidental pick with a used needle with gloves	5,15	1,01	5,45	0,87	-2,10	,037*
Dental intervention with risk for the patient	2,22	1,24	3,95	1,78	-7,79	,000**
Fellatio with ejaculation without condom	4,95	1,15	5,42	1,06	-2,84	,005**
Violation with risk for the victim	5,47	0,7	5,69	0,79	-1,95	,053*
Violation with risk for the rapist	5,13	1,03	5,58	0,91	-3,13	,002**
Dog bite	2,43	1,55	3,68	1,7	-5,10	,000**
Mosquito bite	2,71	1,69	3,52	1,79	-3,11	,002**
Receiving blood from transfusion in Spain	2,75	1,31	3,54	1,77	-3,51	,001**
Surgery with risk for the patient	<b>2,55</b>	<b>1,52</b>	<b>3,94</b>	<b>1,69</b>	<b>-5,73</b>	<b>,000**</b>
Donating blood in Spain currently	<b>1,69</b>	<b>1,08</b>	<b>2,19</b>	<b>1,59</b>	<b>-2,54</b>	<b>,012*</b>
SIGNIFICANT VARIABLES OF PERCEPTION OF RISK	SAMPLE FROM 2014					Sig. (bilateral)
	Dentist	Dentist SD	General Population	General Population SD	U Mann-Whitney	



Surgery with risk for the surgeon	3,72	1,50	3,19	1,46	1713,5	,043*
Dental intervention with risk for the dentist	3,36	1,31	2,78	1,27	1652,5	,020*
Sharing a razor	5,29	0,99	4,86	1,23	1683,5	,023*
Tattoo with a non-sterilized needle	5,71	0,70	5,26	1,22	1672	,008**
Cough or sneeze	2,02	0,96	1,54	0,91	1452,5	,001**
Surgery with risk for the patient	<b>3,38</b>	<b>1,53</b>	<b>2,82</b>	<b>1,54</b>	<b>1703,5</b>	<b>,039*</b>
Donating blood in Spain currently	<b>1,76</b>	<b>1,27</b>	<b>1,49</b>	<b>1,15</b>	<b>1787</b>	<b>,045*</b>

$\bar{x}$  = mean (1=no risk, 2= very low risk, 3=low risk, 4=medium risk, 5=high risk, 6= very high risk)  
 SD= standard deviation  
 t= t Student test  
 Sig. = significance  
 \* = p<0,05  
 \*\* = p<0,01

## RESULTS

Descriptive analysis of perception of risk of infection responses reflects that both samples (1996 and 2014) determine equally as items of major risk ( $\mu \geq 5.5$ ) "sharing a syringe", "vaginal penetration without condom", "anal penetration without condom" and a "violation with risk for both victim and rapist". Both samples coincide to consider as very low risk ( $\mu \leq 1.5$ ) "handshake" and "sharing a pool".

### Differences in perception of risk among DT and GP for each sample

Results from mean statistical comparison of DT and GP realized by T Student and U Mann-Whitney tests reveal significant differences in several items (Table 2). Risks of a "surgery with risk for the patient" and "donating blood currently" ( $p < 0.05$ ) have shown significance in the mean comparison between GP and DT of both samples. In 1996, GP perceived greater risk ( $p < 0.05$ ) and this trend inverted in 2014 ( $p < 0.05$ ).

An exhaustive analysis reflects that in 1996 GP perceives greater risk of HIV transmission in every significant item. GP assigns low risk in "handshake" ( $p < 0.01$ ), "sharing a pool" ( $p < 0.01$ ), "sharing a cup" ( $p < 0.05$ ), "sharing a toilet" ( $p < 0.01$ ) and "sharing a cigarette" ( $p < 0.01$ ) while DT assign any risk. GP also perceives low or medium risk in "dental intervention with risk for the patient" ( $p < 0.01$ ), "dog bite" ( $p < 0.01$ ), "mosquito bite" ( $p < 0.01$ ) and "blood transfusion" ( $p < 0.01$ ) while DT perceive very low risk. Finally, although both groups assign high or very high risk in "accidental prick with a needle wearing gloves" ( $p < 0.05$ ) or "without them" ( $p < 0.05$ ), a "fellatio" ( $p < 0.01$ ), and a "rape with risk for the rapist" ( $p < 0.05$ ) and "the victim" ( $p < 0.01$ ), GP perceives greater risk in every of them.



Comparatively, in 2014's sample, DT are who perceive greater risk in every significant item. DT assign low or medium risk in a "surgery with risk for the surgeon" ( $p < 0.05$ ), "dental intervention with risk for the dentist" ( $p < 0.05$ ) and "cough or sneeze" ( $p < 0.01$ ) when GP perceives low or any risk. Finally, although GP and DT consider very high risk in a "tattoo with a non-sterilized needle" ( $p < 0.01$ ) and "sharing a razor" ( $p < 0.05$ ), GP assigns lower risk.

### **Differences in risk perception of DT and GP among gender**

Comparative analysis among gender reflected differences in both years' samples (table 3).

A common significant item appears in both DT samples for the "cough or sneeze" item. Although in 1996 are men who perceive greater risk ( $p < 0.05$ ), in 2014 are women ( $p < 0.05$ ). In 1996, men from both groups (DT and GP) assign higher risk scores than women and, in 2014, that trend has inverted. In 1996 DT men perceive higher risk than women in a "wet kiss" ( $p < 0.05$ ), "sharing a contact sport" ( $p < 0.01$ ) and "vaginal intercourse without condom" ( $p < 0.01$ ). However, in 2014, women DT perceive greater risk in a "fellatio without condom" ( $p < 0.01$ ) or "cunnilingus" ( $p < 0.01$ ) among others.

GP men from 1996 sample assign greater risk in every variable except in a "surgery with risk for the surgeon" where men consider more risk than women ( $p < 0.01$ ). In 2014, women GP perceive greater risk than men in a "surgery with risk for the surgeon" ( $p < 0.01$ ), "mosquito bite" ( $p < 0.01$ ) or "dog bite" ( $p < 0.01$ ).

### **Differences in risk perception in DT and GP among age**

Comparative analysis among age only highlights important differences between GPs

under twenty-five years old and over forties. In both years' samples are the older who perceive greater risk. In 1996 the younger ones consider any or very low risk in "sharing a pool" ( $p < 0.01$ ) or a "mosquito bite" ( $p < 0.05$ ) while the older subjects consider these to be of greater risk.

In 2014, the under twenty-five year olds consider no-risk or low risk in "sharing a contact sport" ( $p < 0.05$ ) and a "wet kiss" ( $p < 0.01$ ) while subjects over forty years old consider medium risk.

Two items appear significant in both GP samples. For the risks of "Sharing a cigarette" ( $p < 0.05$ ) and "sharing a toothbrush" ( $p < 0.01$ ), younger subjects assign low risk and the older medium or high risk.

### **Differences in perception of risk among GP regarding their educational level**

Mean comparison among GP educational level in 1996 reflects that bachelor students consider medium risk in "sharing a toothbrush" when people with primary education and vocational training consider high risk ( $p < 0.01$ ). In 2014, GP with university education assign any or low risk in "cough or sneeze" ( $p < 0.05$ ), "surgery with risk for the patient" ( $p < 0.01$ ) or a "dog bite" ( $p < 0.01$ ) while people with secondary education assign low or medium risk.

### **Differences in perception of risk in DT regarding employment status**

Mean comparison among DT employment status reflects in 1996 that those who worked in the public and the private service consider that the risk of infection in an "anal intercourse without condom" is high while those who worked self-employed consider that it is, significantly, of very high risk ( $p < 0.01$ ).



**Tabla 3.** Results of the mean comparison among gender. Significant variables

GENERAL POPULATION									
GENERAL POPULATION 1996					GENERAL POPULATION 2014				
Item of perception of risk	Men	Women	t	Sig.	Item of perception of risk	Men	Women	U Mann-Whitney	Sig.
Sharing contact sport	3,35	2,65	1,97	,052*	Vaginal intercourse without condom	5,39	5,76	519,5	,048*
Surgery with risk for the surgeon	3,30	4,18	-2,92	,004**	Fellatio with ejaculation without condom	4,14	5,11	439	,015*
Sharing a cigarette	2,07	2,91	-2,94	,004**	Cunnilingus	3,79	5,09	368	,001**
			Tattoo with a non-sterilized needle	4,89	5,48	471,5	,030*		
DENTISTS									
DENTISTS 1996					DENTISTS 2014				
Item of perception of risk	Men	Women	t	Sig.	Item of Perception of risk	Men	Women	U Mann-Whitney	Sig.
Wet kiss	3,55	2,69	2,31	,024*	Sharing a syringe	5,72	5,98	288,5	,014*
				1,67	2,53	227	,020*		
Sharing contact sport	2,91	1,84	3,23	,002**	Dental intervention with risk for the patient	2,06	2,80	231,5	,026*
				1,89	2,58	240	,036*		





Vaginal intercourse without condom	5,63	5,96	-3,20	,002**	Surgery with risk for the surgeon	2,89	4,10	199,5	,006**
<b>Cough or sneeze</b>	<b>1,87</b>	<b>1,38</b>	<b>2,28</b>	<b>0,26*</b>	3,78	178,5	3,10	186	,003**
					Dog bite	1,78	3,10		
					3,38	198,5	,005**		
					<b>2,18</b>	<b>227</b>	<b>,017*</b>		
					Mosquito bite				
					2,17				
					<b>Cough or sneeze</b>				
					<b>1,67</b>				

$\bar{x}$  = mean (1=no risk, 2= very low risk, 3=low risk, 4=medium risk, 5=high risk, 6= very high risk)

t = t Student test

Sig. = significance

\*= p<0,05

\*\*=p<0,01

In 2014, unemployed DT consider no risk in a “wet kiss” while self-employed and permanent or casual employees consider it of low or very low risk ( $p<0.05$ ). Permanent employees consider no risk in a “blood transfusion” while self-employed, unemployed and casual employees assigned low risk ( $p<0.01$ ).

Finally, comparison among the frequency of attendance reflects in 1996, that DT who sometimes attend HVI/Aids patients consider very little risk of contagion in “cough or sneeze” while those who almost never attend those patients, consider it of no-risk ( $p<0.05$ ). These last professionals also consider very low risk in a “dog bite” while DT who frequently attend HIV patients consider very little risk ( $p<0.05$ ). No differences have appeared in 2014.

### Comparative results on DT personality traits

Results from R Pearson test to 2014 DT sample detect significant differences in perception of risk variables according to personality traits as neuroticism and extroversion evaluated by test EPI and the gender of DT participants. Negative correlations in neuroticism appear among men and women which indicate that a higher neuroticism score, a lower perception of risk of infection and vice versa. For the extraversion trait only positive correlations appear in female DT (Table 4).

## DISCUSSION

Results in 1996 pointed out that GP reflected greater perception of risk of infection than DT in almost all variables (whether they had real risk or not) but results in 2014 show that DT present higher perception of risk of infection than GP. This is consistent with other investigations which relate a higher perception of risk in health workers for their daily



**Table 4.** Results of R Pearson Tests. Significant variables

	Item of perception of risk	r	Sig.
<b>Women* neuroticism</b>	Cough or sneeze	-,327	P<0,05
	Sharing a syringe	-,363	P<0,05
	Sharing a toothbrush	-,461	P<0,01
	Mosquito bite	-,333	P<0,05
	Accidental prick with a needle with gloves	-,380	P<0,05
<b>Women* extroversion</b>	Sharing a cup	+,438	P<0,01
	Sharing a bitten pencil by children	+,355	P<0,05
	Surgery with risk for the patient	+,308	P<0,05
	Surgery with risk for the surgeon	+,291	P<0,05
	Dog bite	+,316	P<0,05
	Dental intervention with risk for the dentist	+,293	P<0,05
<b>Men* neuroticism</b>	Sharing a cigarette	-,432	P<0,05
	Wet kiss	-,504	P<0,01
	Dental intervention with risk for the dentist	-,404	P<0,05

\*= correlation  
R = R Pearson test  
Sig. = significance

contact with infectious agents (Horsman, 1995). Bennet (1995) found in a sample of US dentists that although dentist showed willingness to treat HIV patients, they had a high fear of infection, Reis (2005) found in a group of Nigerian health workers that their greatest fear was to be infected and that 65% of them refused to treat HIV/Aids patients. Lohman (2000) discovered that most doctors referred afraid to work with HIV/Aids patients and about 50% German nurses referred fear of contacting these patients.

In 1996 there were misconceptions about mechanisms of HIV transmission which are maintained currently in both GP and DT groups. Given the risks of “sharing a cup”, “sharing a cigarette”, “sharing a toilet”, “sharing a bitten pencil at school by children” or “sharing a contact sport” both samples give some risk. A similar result among Vietnam-

ese doctors was found by Quach (2005) where 12,1% of them believed that risk of infection existed by sharing a toilet. In both years' samples, DT approach to popular belief of risk of infection through saliva and risk of contracting HIV/Aids through cough, sneeze and a dog or mosquito bite. Similarly, Azodo (2013) discovered that 28% of dental Nigerian students considered risk in a mosquito bite and 11,4% in sharing cups and dishes. Jeevitha (2013) reported that 78% of indian physicians referred afraid of touching sweat or saliva and Aisien (2005) found that between 15% and 38% of Nigerian dentists believe that HIV could be transmitted by saliva, urine, feces and vomit.

Comparison by gender reflects that in 1996, there were more gender differences in both groups of GP and DT. Situations as “sharing a contact sport”, “cough or sneeze”



or a “wet kiss” were perceived as greater risk by men than by women while situations like “vaginal intercourse without condom”, “sharing a cigarette” or the risk of a “surgeon at surgery” were perceived as greater risk by women. However, all significant variables in 2014 are perceived as greater risk by women. This result differs from other studies which do not find any gender difference like Mascolo (2012) or Fotedar (2013). Therefore, we checked if there existed positive correlation between greater perception of risk and personality traits. It was assumed that higher levels of neuroticism were associated to greater perception of risk and high extroversion scores to more willingness to treat HIV patients. Nevertheless, in the trait of neuroticism, every significant variable showed a negative correlation contrary to what was expected indicating that the higher the level of neuroticism, the lower the perception of risk. Correlations of extroversion were not conclusive.

Comparison according to age brackets reflects that GP scores in both years’ samples are very polarized and that subjects over forty are who perceive greater risk in almost every variable than subjects under twenty-five. In DT group, this polarization is not so clear. Differences have not been found in 2014 coinciding with the results of Mascolo (2012).

According to the treatment of HIV/Aids patients, GP and DT of both samples perceive greater risk of VIH infection from patient to dentist than vice versa. While dentist-to-patient infection is considered as very little or low risk, transmission from patient to dentist is considered to be low to medium risk. Jiménez (2007) reported that 98,9% of Spanish DT and dental hygienists consider that the probability of transmission from DT to patient is low or zero but 27,5% consider that patient-to-dentist transmission is high or very high, Valdez (2012) found that 12,5% of Colombian health workers, including DT, still

refer fear of attending a VIH/Aids patient and Uribe (2011) reported that 82,4% of Colombian health workers are concerned about contracting HIV during practice and 14,7% consider that they have a high risk of infecting HIV.

According to the employment status of DT, differences appear between DT working on their account (self-employed) and those who work for others whether part-time or permanent. In both samples, self-employed DT and casual employees perceive greater risk which suggests that employment status and working in a public or private service influence professionals’ attitudes. In 2014, unemployed DT perceive lower risk in almost every item compared with their active peers which suggests that low contact with HIV/Aids patients can bring these professionals to underestimate the real risk of infection.

According to frequency of attendance, 1996 results found differences between DT who usually attend HIV patients and those who never or almost never did it. Those who did usually treat these patients perceived more risk of infection in a “dog bite” and “cough or sneeze” than those who rarely attended them. This data supports the hypothesis that attending HIV/Aids patients increases fear of infection through saliva in DT. However, we haven’t found differences by frequency of attendance in 2014 which suggests that the attendance frequency of HIV/Aids patients improves DT’s attitudes and their willingness to treat them. Bennet (1995) reported that DT who have treated more than two patients or who have a HIV-positive friend have more positive attitudes towards HIV/Aids patients. Angelillo (1994) found that 70,7% of Italian dentist knew better the risks of contagion, their knowledge of the disease increased and they were more willing to treat these patients if they had had previous contact with HIV/Aids patients.



This survey has reflected that it will be necessary to reinforce the dentists' knowledge about VIH/Aids disease to reduce their risk perception of transmission and improving the health care. It is still necessary to make an educational effort to eliminate misconceptions about ways of HIV transmission.

## CONCLUSIONS

In relation to the accurate risk perception, between 1996 and 2014 an improvement has been produced in general population but although throughout years information about this disease has increased it has not been appreciated in a better and accurate risk perception in dentists. Related to age, only in 1996 a difference was found in risk perception among older forties dentists and under twenty-five years old. The trend among sex has inverted. While in 1996 were male dentists who perceived greater risk, in 2014 are women. It has evolved towards a lower risk perception of transmission between dentists who frequently attend VIH/Aids patients. No differences in dentists have been found according to personality traits.

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