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Psychosocial predictors and HIV-related behaviors of old adults versus late middle-aged and younger adults

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### Abstract

**Objectives.** We investigated the psychosocial predictors and HIV-related behaviours of old adults versus late middle-aged and younger adults.

**Methods.** A demographically representative sample of residents in Italy aged 18-75 years ( $n = 2018$ ) was subdivided into three age groups: (a) younger adults (18-49 years), (b) late middle-aged adults (50-59 years), and (c) old adults (60-75 years). Interviews were conducted using computer-assisted telephone survey methodology.

**Results.** Despite reporting similar levels of sexual risk behaviours, late middle-aged and old adults were less likely to use condoms and to have ever had an HIV test. The levels of HIV/AIDS knowledge, risk perception, perceived behavioural control, and behavioural intentions toward condom use were lower among old adults compared to younger adults. Old adults were less likely to have discussed HIV/AIDS with friends, relatives, or health professionals.

**Discussion.** Old adults should be included in prevention efforts targeting knowledge, perceptions, and intentions toward condom use. Future studies should be cautious when overgeneralizing the results to all individuals aged 50 and older.

**Keywords:** HIV/AIDS; survey; sexual behaviour; risk perception; knowledge; older adults;

Theory of Planned Behaviour

Psychosocial Predictors of and HIV-Related Behaviours of Old Adults versus Late Middle-Aged  
and Younger Adults

In Western and Central Europe, an estimated 30,000 people were newly infected with HIV in 2011 and in the same year 900,000 adults and children were living with HIV infection (UNAIDS/WHO, 2012). Given the absence of a decline in the number of cases being diagnosed each year and an estimated rate of 5.7 cases in every 100,000 people, HIV continues to be a major public health concern for Europe (ECDC/WHO, 2012). In Italy, the prevalence of people living with HIV/AIDS is around 0.16 among 100 residents (Raimondo et al., 2013). Much attention has been given to preventing HIV infections in young adults, yet 12.9% of newly reported cases of HIV infection in Western Europe were in people aged 50 years or older (Lazarus & Nielsen, 2010). In Italy, a percentage of 25.1 of people living with HIV were between 50 and 59 years old, and 8.2 % were more than 60 years old (Raimondo et al., 2013).

The number of older adults living in Western countries with a diagnosis of HIV/AIDS has risen in the past decade (Justice, 2010; Lazarus & Nielsen, 2010), and this is due to two main reasons. First, with the introduction of highly active antiretroviral treatment (HAART) in the mid-1990s, life expectancy among people living with HIV has increased significantly. Second, some of the older people living with HIV are those who were infected late in life (Palella et al., 1998).

Although evidence of HIV transmission, high rates of late presentation, and an increased risk of short-term mortality have been found among older adults (Smith, Delpech, Brown, & Rice, 2010), little research attention has been paid to the prevention of HIV to this population of elderly people (Davis & Zanjani, 2012; Milaszewski, Greto, Klochkov, & Fuller-Thomson, 2012).

Despite its considerable relevance (Lazarus & Nielsen, 2010; Smith et al., 2010), little is known about the psychosocial predictors (e.g., HIV-relevant knowledge, risk perception, attitudes, intentions) of HIV-related behaviours (e.g., condom use or HIV testing) of older adults compared with more frequently studied HIV risk groups such as young people, gay men, and injection drug users. This is noteworthy since “prevention and treatment programs, which have been developed

with a young population in mind, could be notably less effective for older persons” (Mack & Bland, 1999, p. 687). A review of social and behavioural literature regarding older adults and HIV found that most articles on risk and/or prevention were descriptive in nature and defined their samples as age 50 and older without comparison groups of younger people (Sankar, Nevedal, Neufeld, Berry, & Luborsky, 2011). Moreover, the authors pointed out that only few articles subdivided age 50 and older into subgroups and, because of that, the results were overgeneralized to all individuals aged 50 and older. Although 50 years of age is not a marker of conditions associated with older age, in HIV-related psychosocial research, the term “older adult” has been used to refer to people aged 50 or older, while “younger adult” refers to people younger than 50 (Crystal et al., 2003; Sankar et al., 2011; Ship, Wolff, & Selik, 1991). Specifically, the designation of the age of 50 and over as older adult in relation to HIV/AIDS was based on 1980s CDC (Centers for Disease Control and Prevention) reports (see Sankar et al., al., 2011). To increment the validity of the findings in the field of aging and HIV and avoid the risk of overgeneralizing the results to all individuals aged 50 and older, in the present study three age cohorts will be considered: younger adults (18-49 years), late middle-aged adults (50-59 years), and old adults (60-75 years). Therefore, in line with the literature (Crystal et al., 2003; Sankar et al., 2011; Ship, Wolff, & Selik, 1991), the term “older adult” will be used to refer to people aged 50 or older, while the term “old adult” will be used in the present study to refer to people aged 60-75 years.

There is some evidence that HIV testing and use of condoms among persons aged 50 and older seem lower compared to younger adults, despite the levels of risk behaviours of older adults are similar to younger adults (Sankar et al., 2011). The first aim of the present study was to compare HIV-related behaviours (i.e., HIV testing, HIV risk behaviours, and use of condoms) between three groups of participants drawn from the Italian general population: (a) younger adults (18-49 years), (b) late middle-aged adults (50-59 years), and (c) old adults (60-75 years).

Among the psychosocial/cognitive predictors of HIV-related behaviours, some research findings have shown that the levels of HIV-related knowledge and HIV risk perception are lower

among individuals aged 50 and older compared to younger adults (Sankar et al., 2011). Previous reviews have demonstrated the success of the Theory of Planned Behaviour (Ajzen, 1991) as predictor of condom use across studies (Albarracín, Fishbein, Johnson, & Muellerleile, 2001; Bennett & Bozionelos, 2000). In brief, this theory identifies condom use (the behaviour) as depending on the strength of an intention whether or not to use condoms. In turn, behavioural intentions are predicted by three variables: attitudes towards the behaviour, subjective norms (beliefs about how significant others will evaluate condom use), and perceived behavioural control (individuals' perceptions of their ability to use condoms). However, no study has compared the differences between old, late middle-aged and younger adults in intentions, attitudes, subjective norms, and perceived behavioural control toward condom use. The second aim of the study was to investigate age differences in psychosocial/cognitive HIV domain.

The lack of opportunity to discuss HIV-related issues may be one of the reasons why the levels of HIV-related knowledge and HIV risk perception are lower among individual aged 50 and older compared to younger adults. The lack of focus on individual aged 50 and older in the HIV/AIDS literature suggests ageist assumptions concerning age and sexuality (Emlet, 2006) and significant others including health care professionals may also act on the basis of similar assumptions. For example, older adults are stereotyped as less sexually capable and less interested in sex than younger people; therefore, the HIV risk-related sexual behaviours of older adults may be ignored by family members, health care workers, and society in general. There is evidence that health care providers overlook older people's risk for HIV/AIDS (Kim et al., 2001; Skiest, Rubinstien, Carley, Gioiella, & Lyons, 1996) and feel discomfort when exploring elderly patients' sexual behaviour (Skiest & Keiser, 1997). Health care professionals' recommendations are the primary reason for HIV testing among older adults and the failure to recognize the at-risk status of older adults by health care professionals may explain why HIV testing is lower among this cohort of people (Lekas, Schrimshaw, & Siegel, 2005). Based on the above-mentioned evidence, the third

aim of the present study was to explore the relationship between the three age groups and opportunity to discuss HIV/AIDS with significant others including health care providers.

## **Methods**

### **Participants and Procedure**

Using computer-assisted telephone survey methodology, a sample of 2018 Italian residents was interviewed. The telephone survey was conducted in October 2012, using random digit dialling. Each interview lasted about 15 minutes. During the interview, lists of items within sections were sequenced randomly to balance for possible order effects. Proportional quota sampling was used to ensure that respondents were demographically representative of the general population, with quotas based on age group, sex and region. Of the total phone numbers that were dialled, 0.7% was fax machine, 0.4% was answer machine, 14.5% was not valid, 22.5% was unanswered, 12.8% was not eligible (e.g., company or private firm telephone number or underage respondents), 39.3% resulted in a refusal, 1.3% were addressed to individuals with demographic characteristics of quotas already met, and 8.7% were completed interviews. The total number of calls where potential participants had responded was 11,427 and 2018 (17.66%) interviews were completed. Although the migrant population was underrepresented, the survey can be considered demographically representative of resident population of Italy between 18 and 75 years of age. Younger adults (18-49 years) were 1132 (56.2%), late middle-aged adults (50-59 years) were 383 (19.0), and old adults (60-75 years) were 500 (24.8%). The socio-demographic characteristics of the participants by the targeted age groups are shown in Table 1.

### **Measures**

The interview was divided into four main sections: general and demographic information (i.e., gender, age, marital status, level of education, employment status, nationality, sexual orientation, religious faith), psychosocial/cognitive variables (i.e., HIV/AIDS knowledge, risk perception, behavioural intentions, attitudes towards the behaviour, subjective norms, and perceived behavioural control) and behavioural HIV variables. The latter included the opportunity to discuss

HIV/AIDS with friends, relatives, or health professionals, past risk behaviours (i.e., unprotected sexual intercourse with multiple partners) and preventive behaviours (i.e., HIV testing, condom use).

We used ten and four items measuring HIV/AIDS knowledge and risk perception, respectively. Five questions were taken from the UNAIDS indicators for *knowledge* of HIV prevention methods and knowledge about HIV/AIDS transmission (UNAIDS, 2010) and five questions from a previous study conducted in Italy (see Prati, Mazzoni, & Zani, 2014). Correct responses were recoded as 1, while incorrect responses were recoded as 0. Then all five items were added to form an HIV/AIDS knowledge index that ranged from 0 (low knowledge) to 10 (high knowledge). The measure of *risk perception* was derived from a previous study conducted in Italy (Prati, Pietrantonio, & Zani, 2011). Item examples were “Do you think you are at risk of getting HIV infection?” and “Are you worried about HIV/AIDS?” Responses on risk perception were provided using a 10-point Likert-type scale (1 = not at all, 10 = extremely). The items were averaged to an overall measure of risk perception. Cronbach alpha for this scale was acceptable (.74).

Eight questions were based on the recommendations for measuring intentions, attitudes, perceived behavioural control, and subjective norms directly (Fishbein & Ajzen, 2010). Two items were used to measure *perceived behavioral control* using the same stem: “For me to use condom in the next sexual intercourse is” and two kinds of anchors of a scale. Specifically, the respondents were asked to give a number between 1 *extremely difficult or impossible* and 10 *extremely easy or possible*, respectively. *Attitude* toward condom use was measured through two items: “For me, using a condom in the next sexual intercourse is extremely valuable/extremely worthless” and “For me, using a condom in the next sexual intercourse is extremely pleasant/ extremely unpleasant.” For both questions, the respondents again had to report a number between 1 and 10. *Subjective norms* were measured through two items: “Most people whose opinions I value would approve the use of a condom in my next sexual intercourse (strongly disagree/strongly agree) and “Most people who are important to me think that I should/I should not use a condom in the next sexual intercourse.” For

both questions, the respondents again had to report a number between 1 and 10. *Intention to use condoms* was measured through a couple of items: “I plan to use a condom in the next sexual intercourse” and “I intend to use a condom in the next sexual intercourse.” Participants were asked to report a number between 1 and 10, whereby 1 meant extremely likely or disagree, and 10 extremely unlikely or agree, respectively. These measures were tested by confirmatory factor analysis with the aim of assessing their unidimensionality, convergent, and discriminant validity. Confirmatory factor analysis revealed that these measures had adequate fit ( $\chi^2 = 114.18$ ,  $df = 14$ ,  $p < .001$ , NFI = .96, CFI = .96; RMSEA = .060). Each pair of items was averaged to form a composite measure.

To measure past *sexual behaviour at risk* for HIV infection, participants were asked if they had unprotected sexual intercourse with multiple partners in the last four months (‘yes/no’). Furthermore, we were interested in measuring participants’ *preventive behaviours*. Specifically, participants were asked if they had ever been tested for HIV (‘yes/no’) and if they used condoms during the last sexual intercourse (‘yes/no’). Finally, we asked participants if, in the last four months, they discussed with friends, relatives, or health professionals about HIV/AIDS (‘yes/no’).

### **Statistical analyses**

To investigate the influence of aging controlling for the effects of the other socio-demographic variables, we employed logistic and ordinal regression analyses when the dependent variable was dichotomous and non-dichotomous (i.e., ordinal), respectively. Based on Rosenthal’s (1996) guidelines, small, medium, and large effect sizes categories for odds ratios were as follows: about 1.5 to 1 = small effect (i.e., 1.5 or 0.66), about 2.5 to 1 = medium (i.e., 2.5 or 0.40), about 4 to 1 = large (i.e., 4.0 or 0.25).

## **Results**

### **Age Differences in Socio-Demographic Variables**

Table 1 shows the age differences in socio-demographic variables. Compared to older adults, younger adults tended to report a higher level of education, had a higher likelihood to be

unmarried, non-Italian, student/unemployed/employed, and had a lower likelihood to be retired/unable to work. There were no age differences by gender, sexual orientation, and religious faith.

### **Age Differences in HIV-Related Behaviours**

To address the first aim of our study, we examined age differences in HIV-related behaviours. To control for the effects of gender and the socio-demographic variables found significant in Table 1 (i.e., education, marital status, and employment status) the adjusted association between age and HIV-related behaviours was estimated using multivariate logistic regression modelling. Specifically, the model was estimated including the following independent variables: gender, age, level of education, marital status, and employment status. We did not include nationality because the sample size of non-Italian participants was too small to have satisfactory statistical power. Table 2 shows the differences between the age groups on different behavioural variables. The likelihood of HIV testing was lower in participants aged 60-75 years (24.5%) than in those aged 18-49 years (44.8%) or between 50 and 59 years (41.9%). Changing the reference category of the logistic regression to participants aged 60-75 years confirmed that the likelihood of HIV testing was lower in participants aged 60-75 years than in those aged between 50 and 59 years ( $OR = 1.80$ , 95%  $CI = 1.22-2.66$ ). The likelihood of condom use at respondents' last intercourse was higher in participants aged less than 50 years (43.8%) compared to those aged between 50 and 59 years (23.1%) or 60-75 years (14.9%). However, there was no significant difference by age groups in recent unprotected intercourse with multiple partners.

In addition, the results in Table 2 revealed that the likelihood of HIV testing was higher in female participants, married/cohabitating, and lower among students/unemployed. The likelihood of condom use at respondents' last intercourse was lower among participants who are married/cohabitating and retired/unable to work, while it was higher among students. The likelihood of unprotected intercourse with multiple partners was lower among female and married/cohabitating participants.

### **Age Differences in Psychosocial/Cognitive HIV Domain**

To address the second aim of our study, we tested for age differences in psychosocial/cognitive HIV domain. Specifically, six ordinal regression analyses were used to test whether or not there were differences on HIV/AIDS knowledge index, HIV risk perception, intentions, attitudes, perceived behavioural control, and subjective norms between the age groups (see Table 3). There was a significant effect of age groups on HIV/AIDS knowledge index, HIV risk perception, intentions, and perceived behavioural control. Specifically, compared to other participants, individuals aged 60-75 years reported lower scores on HIV/AIDS knowledge index, HIV risk perception, intentions, and perceived behavioural control. Moreover, scores on intention to use condom were lower in participants aged between 50 and 59 years than in those aged less than 50 years. Finally, the ordinal regression analyses revealed that (1) the HIV/AIDS knowledge index was positively related to the level of education and lower among single and unemployed participants; (2) the levels of HIV risk perception were higher among students, female participants and those who achieved elementary school; (3) the levels of attitudes toward condom use were higher among female participants and those who achieved a university degree; (4) the scores on subjective norms were higher among female participants and those who achieved elementary school; (5) male participants reported lower perceived behavioural control; (6) the levels of intention to use condoms were higher among students and lower among married participants.

### **Age Differences in Discussion of HIV/AIDS**

Finally, with respect to the third aim of the present study, we investigated age differences in the likelihood to discuss HIV/AIDS with significant others including health care providers. Results showed that only 6.6% of the participants aged 60-75 years discussed with friends, relatives, or health professionals about HIV/AIDS, while the percentage was 16.1% and 13.4% for participants aged less than 50 years and among those aged between 50 and 59 years respectively. The results of the ordinal regression analyses examining the relationship between age and the likelihood to discuss HIV/AIDS with significant others controlling for the effects of the other socio-demographic

variables are shown in Table 4. Participants aged 60-75 years were two times less likely to have discussed HIV/AIDS with significant others compared to those aged less than 50 years. The likelihood to discuss HIV/AIDS with significant others was higher among female and retired/unable to work participants.

## **Discussion**

In the present study, the aims were to examine the differences in attitudes, subjective norms, perceived behavioural control, and intentions regarding condom use, HIV/AIDS knowledge, risk perception, and opportunity to discuss HIV/AIDS with friends, relatives, or health professionals. Specifically, we compared three groups of participants drawn from the Italian general population: (a) people aged 18-49 years, (b) people aged 50-59 years, and (c) people aged 60-75 years. The results extend the findings of previous studies on HIV infection among older people in different ways.

All the results about age differences were controlled for demographic variables like gender, education, marital status, and employment status. Differences in such demographic variables were quite mixed but partially confirmed previous results (Signorelli et al., 2006) suggesting that Italian women are more aware of HIV/AIDS (i.e., higher: HIV risk perception, attitudes toward condom use, subjective norms, perceived behavioral control, discussion about HIV/AIDS) than men, and this is confirmed also at a behavioral level (i.e., HIV testing and lower likelihood of unprotected intercourse with multiple partners).

### **Age Differences in HIV-Related Behaviours**

The results of the present study suggest that late middle-aged and old adults' HIV-related sexual risk behaviours may not differ from that of younger adults. Previous studies have already shown that older adults do maintain sexual desires, and can engage in sexual activity including risky HIV-related behaviours (e.g., Gott, 2005). More specifically, we found that the number of people engaging in recent unprotected intercourse with multiple partners is not significantly different between the three age groups. Despite sharing the underlying risk (i.e., recent sexual risk

behaviours), late middle-aged and old adults were less likely to use condoms and to have ever had an HIV test. We extended previous observations (e.g., Sankar et al., 2011) by demonstrating that this combination of findings was more noticeable among participants aged 60-75 years. We believe there may be several reasons why late middle-aged and old adults were less likely to use condoms or request an HIV test. These differences may be due to potential generational and cohort differences. Specifically, elderly people became adults before HIV/AIDS was a known threat and, a part of them, before the sexual revolution that took place in the second half of the Twentieth Century (Milaszewski et al., 2012). Therefore, old adults may be less likely to adopt and negotiate safe-sex practices. It is worthy to note that among the gay community, a group that has frequently been linked to the HIV epidemic, younger adults reported significantly lower rates of never HIV testing (e.g., Prati et al., 2013). These findings seem to suggest that the link between safe-sex practices and age is not merely a matter of birth cohort (i.e., group of people who were born in the same date range), but of social generations, that is cohorts of people who were born in the same date range and shared similar cultural experiences (e.g., being gay or heterosexual in the eighties). To our opinion, the effect of social generations can be detected by investigating age differences in psychosocial/cognitive HIV domain.

### **Age Differences in Psychosocial/Cognitive HIV Domain**

Our findings revealed that old adults but not middle-aged adults report lower HIV-risk perception and HIV/AIDS knowledge. Specifically, these differences were only found for participants aged 60-75 years and the levels of HIV-related knowledge and risk perception among participants aged between 50 and 59 years were similar to those aged less than 50 years. The present findings extend prior research that has focused primarily on individual aged 50 years or older (Sankar et al., 2011). These findings may explain why especially old adults tend to report a lower likelihood of condom use and previous HIV testing than younger adults. For instance, old adults may hold the belief that HIV is a young person's disease or affects "at risk" populations and, therefore, there is no need to use condoms (Orel, Spence, & Steele, 2005). However, the

differences between old and younger adults in HIV-related knowledge and risk perception were small in magnitude.

To provide a more explanatory frame for understanding the differences between old and younger adults, we used the key-variables of the Theory of Planned Behaviour (Ajzen, 1991): perceived behavioural control, subjective norms, attitudes and intention to use condoms. We found that perceived behaviour control and intention to use condoms were lower in participants aged 60-75 years. We also note that the differences in perceived behaviour control toward condom use were small in magnitude. Conversely, the differences in intention to use condoms were medium in magnitude and significantly differentiated the three age groups from each other. The present findings suggest that intention to use condoms is an important explanatory variable in the difference in condom use between younger and older adults. This is noteworthy, given that the existent theoretical and empirical evidence supports the relationship between intention and behaviour (e.g., Webb & Sheeran, 2006).

### **Age Differences in Discussion of HIV/AIDS**

Finally, another explanatory variable used in the analysis is the degree to which significant others (friends, relatives, or health professionals) discussed HIV/AIDS with younger, middle-aged, and old adults. We found that participants aged 60-75 years were less likely to have discussed HIV/AIDS with significant others. This finding indicates the importance of these inequalities as factors that influence the promotion of safe sexual behaviours among old adults. The ageist assumptions about sexuality and senility may preclude open discussion of issues pertaining to this topic among older adults (Altschuler, Katz, & Tynan, 2004; Emlet, 2006) and explain the observed high rates of late presentation and increased risk of short-term mortality in this population (Sankar et al., 2011).

### **Implications and Conclusions**

The findings of this study are relevant to policy makers and program managers engaged in AIDS prevention programs given the evidence of HIV transmission, high rates of late presentation

and an increased risk of short-term mortality among older adults (e.g., Lazarus & Nielsen, 2010; Smith et al., 2010). Despite the relatively few published interventions aimed at the prevention of HIV among older adults, there is some evidence of their effectiveness (e.g., Davis & Zanjani, 2012; Milaszewski et al., 2012). The findings of the present study indicate that intention to use condoms may play a key role in the prevention of HIV/AIDS among older adults. A previous literature review suggested that in order to facilitate the translation of intentions into action, practitioners may promote intention stability and implementation intention formation (Webb & Sheeran, 2006). Risk reduction strategies should also pay special attention to the requirements at each life stage. Interventions concerning safer sexual practices among older people must be conducted in a way that addresses biologic events (e.g., erectile dysfunction, menopause), life course changes, and cohort effects (Zablotsky & Kennedy, 2003). Finally, to increase the involvement of health care professionals in the prevention of HIV among older adults, educational interventions should be provided (Altschuler et al., 2004; Davis & Zanjani, 2012; Milaszewski et al., 2012).

In interpreting the results of this study, two limitations should be considered. First, in this study, we relied on self-reported information. Another limitation involved the use of a cross-sectional design that provides only a snapshot of a complicated system of relationships at a single point in time. To address these limits, further studies, based on longitudinal designs and on multiple measures of behaviours, are needed. Despite this, the present results indicate that young and older adults, especially those aged 60-75 years, differ in HIV-related knowledge, HIV risk perception, HIV testing, opportunity to discuss HIV/AIDS with friends, relatives, or health professionals, perceived behavioural control, intention of and use of condoms. Nevertheless, contrary to the ageist assumptions, the sexual risk practices of older adults are not particularly different from those of younger adults. These findings support the inclusion of older adults, especially those aged 60-75 years, in prevention efforts promoting condom use and HIV test. Finally, the results of the present study revealed important differences between participants aged 50-59 years and 60-75 years.

Therefore, future studies should subdivide participants age 50 and older into subgroups and use caution when overgeneralizing the results to all individuals aged 50 and older.

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Table 1

*Socio-demographic characteristics of participants*

	18-49 years		50-59 years		60-75 years			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	$\chi^2$	<i>p</i>
Gender							3.865	.145
Male	564	49.9%	201	52.5%	230	46.0%		
Female	567	50.1%	182	47.5%	270	54.0%		
Level of education							221.322	<.001
Elementary school	9	0.8%	18	4.7%	91	18.2%		
Middle school	229	20.3%	109	28.5%	129	25.8%		
High school	602	53.3%	185	48.4%	179	35.8%		
University	290	25.7%	70	18.3%	101	20.2%		
Marital status							104.678	<.001
Unmarried	466	41.2%	64	16.7%	114	22.8%		
Married/Cohabiting	664	58.8%	319	83.3%	385	77.2%		
Employment status							1317.173	<.001
Retired/Unable to work	12	2.7%	43	9.6%	393	87.7%		
Student	155	98.7%	1	0.6%	1	0.6%		
Unemployed	217	61.6%	84	23.9%	51	14.5%		
Employed	747	70.7%	254	24.1%	55	5.2%		
Nationality							10.372	.006
Italian	1101	97.4%	380	99.2%	497	99.4%		
Non-Italian	29	2.6%	3	0.8%	3	0.6%		
Sexual orientation							3.307	.191
Heterosexual	1064	94.5%	366	96.3%	477	96.2%		

Homosexual/bisexual	62	5.5%	14	3.7%	19	3.8%		
Religious faith							3.942	.139
Religious	937	82.8%	327	85.4%	432	86.4%		
Not religious	195	17.2%	56	14.6%	68	13.6%		

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*Note.* Numbers may not add up to total because of missing values.

Table 2

*Adjusted Odds Ratios (95% Confidence Intervals) for the Associations between Socio-Demographic Characteristics and HIV-Related Behaviours*

	HIV testing	Unprotected intercourse with multiple partners	Condom use
Gender (female)	1.22(1.00-1.49)*	0.34(0.19-0.61)**	0.90(0.71-1.14)
Age (in years)			
18-49	—	—	—
50-59	0.74(0.58-0.95)*	1.57(0.85-2.87)	0.54(0.40-0.74)**
60-75	0.40(0.27-0.59)**	1.63(0.57-4.62)	0.46(0.27-0.77)**
Level of education			
Elementary school	—	—	—
Middle school	0.94(0.58-1.53)	0.86(0.23-3.28)	0.82(0.40-1.65)
High school	1.07(0.67-1.70)	0.63(0.17-2.30)	0.88(0.44-1.75)
University	1.49(0.91-2.42)	0.64(0.17-2.46)	0.93(0.46-1.89)
Marital status (Married/Cohabiting)	1.65(1.32-2.07)**	0.22(0.13-0.37)**	0.37(0.28-0.48)**
Employment status			
Employed	—	—	—
Retired/Unable to work	0.69(0.47-1.01)	0.41(0.14-1.24)	0.55(0.32-0.94)*
Student	0.24(0.15-0.38)**	0.45(0.18-1.13)	1.78(1.12-2.83)*
Unemployed	0.62(0.47-0.81)**	0.64(0.29-1.42)	0.90(0.65-1.24)

*Note.* Odds ratios are adjusted for the other predictors in the model. \* =  $p < .05$ ; \*\* =  $p < .01$ .

Table 3

*Adjusted Odds Ratios (95% Confidence Intervals) for the Associations between Socio-Demographic Characteristics and Psychosocial/Cognitive**HIV Domain*

	HIV-related knowledge	HIV risk perception	Attitudes	Subjective norms	Perceived behavioural control	Intentions
Gender (female)	0.92(0.79-1.08)	1.48(1.26-1.73)**	2.01(1.71-2.36)**	1.44(1.22-1.69)**	1.39(1.21-1.60)**	0.93(0.79-1.10)
Age (in years)						
18-49	—	—	—	—	—	—
50-59	0.85(0.69-1.05)	0.81(0.66-1.00)	0.98(0.79-1.21)	1.11(0.89-1.38)	0.86(0.72-1.02)	0.78(0.63-0.96)*
60-75	0.70(0.52-0.96)*	0.65(0.48-0.88)**	0.93(0.68-1.26)	0.90(0.66-1.24)	0.68(0.52-0.88)**	0.47(0.34-0.64)**
Level of education						
Elementary school	—	—	—	—	—	—
Middle school	2.76(1.90-4.01)**	0.68(0.47-0.98)*	0.85(0.59-1.23)	0.59(0.41-0.87)**	0.91(0.67-1.23)	0.99(0.68-1.44)
High school	5.44(3.77-7.84)**	0.57(0.40-0.81)**	0.89(0.63-1.28)	0.55(0.38-0.79)**	0.83(0.61-1.12)	0.88(0.62-1.27)
University	9.17(6.22-13.52)**	0.44(0.30-0.63)**	0.68(0.47-0.99)*	0.45(0.31-0.67)**	0.83(0.60-1.13)	0.88(0.60-1.28)
Marital status (Married/Cohabiting)	1.24(1.03-1.49)*	0.72(0.61-0.87)**	0.86(0.72-1.03)	1.10(0.92-1.32)	0.90(0.77-1.05)	0.63(0.53-0.76)**
Employment status						

Employed	—	—	—	—	—	—
Retired/Unable to work	0.92(0.68-1.26)	1.03(0.76-1.40)	1.17(0.86-1.59)	1.02(0.74-1.40)	1.17(0.90-1.52)	0.78(0.57-1.07)
Student	0.81(0.59-1.13)	1.48(1.08-2.03)*	1.36(0.99-1.88)	1.14(0.82-1.57)	1.05(0.80-1.37)	1.72(1.23-2.39)**
Unemployed	0.66(0.53-0.83)**	1.24(0.99-1.55)	0.99(0.79-1.23)	0.90(0.71-1.13)	0.86(0.71-1.03)	0.91(0.73-1.14)

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*Note.* Odds ratios are adjusted for the other predictors in the model. \* =  $p < .05$ ; \*\* =  $p < .01$ .

Table 4

*Adjusted Odds Ratios (95% Confidence Intervals) for the Associations between Socio-Demographic Characteristics and Discussion of HIV/AIDS*

	Discussion of HIV/AIDS
Gender (female)	1.32(1.02-1.75)*
Age (in years)	
18-49	—
50-59	0.70(0.63-1.28)
60-75	0.53(0.29-0.92)*
Level of education	
Elementary school	—
Middle school	1.21(0.55-4.00)
High school	1.64(0.79-5.10)
University	2.19(1.04-7.21)
Marital status (Married/Cohabiting)	1.08(0.80-1.48)
Employment status	
Employed	—
Retired/Unable to work	2.20(1.10-4.77)*
Student	0.78(0.39-1.47)
Unemployed	1.41(0.79-2.59)

*Note.* Odds ratios are adjusted for the other predictors in the model. \* =  $p < .05$ ; \*\* =  $p < .01$ .