A biopsychosocial perspective of sexual behavior in older adults living with HIV: A systematic literature review

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ABSTRACT

Introduction

New HIV diagnoses have increased among adults over 50 and account for almost 20% of new diagnoses in Europe. There is hardly any research exploring the relation between sexual behavior of adults living with HIV aged 50 or older, and biological, psychological and social factors.

Objectives

The aim of this study is to describe sexual behavior of older adults living with HIV from a biopsychosocial perspective.

Methods

We conducted a systematic literature review, including studies published from 2010 to 2016, in English, Spanish or Portuguese, with at least one subsample of people living with HIV aged 50 or older from high-income countries.

Results

Factors influencing sexual decision-making among older adults living with HIV have been studied to come up with a description of what sexual activity or managing sexual risk mean. Use of drugs, a biological factor, was associated with unprotected sex among people of all sexual identities identified. A wide range of psychological and social factors played a key role in the management of sexual risk: HIV disclosure, social abuse during childhood, loneliness and having a partner was associated with unprotected sex while fear of HIV transmission and fear of HIV discrimination was related to sexual abstinence in women.

Conclusion

Further research is needed to provide an interpretative explanation of what it means to stay sexually active and managing sexual risk.

Key words: *HIV/AIDS; older adults; sexual behavior; biopsychosocial perspective*

Una perspectiva biopsicosocial del comportamiento sexual en adultos mayores que viven con el VIH: Una revisión sistemática de la literatura

RESUMEN

Introducción

Los nuevos diagnósticos de VIH han aumentado en los adultos mayores de 50 años y representan cerca del 20% de los nuevos diagnósticos en Europa. No existe hasta el momento ningún estudio que explore la relación entre el comportamiento sexual de los adultos mayores de 50 años que viven con VIH y los factores biológicos, psicológicos y sociales.

Objetivos

El objetivo del estudio es describir el comportamiento sexual de los adultos mayores que viven con VIH desde una perspectiva biopsicosocial.

Material y métodos

Se realizó una revisión sistemática, incluyendo estudios publicados de 2010 a 2016, en inglés, español y portugués, con al menos una submuestra de adultos mayores de 50 años que viven con VIH y de países occidentales.

Resultados

Se estudiaron los factores que influyen en el comportamiento sexual de los adultos mayores que viven con VIH para obtener una descripción de lo que significa la actividad sexual o el riesgo sexual.
El uso de drogas, como factor biológico, fue asociado a sexo sin protección en todas las identidades sexuales identificadas. Los factores sociales desempeñaron un papel clave en la gestión del riesgo sexual: la revelación del estado serológico, abuso durante la infancia, la soledad y tener pareja se asociaron con las relaciones sexuales sin protección. El miedo a la transmisión del VIH y a la discriminación del VIH se relacionaron con la abstinencia sexual en mujeres.

Conclusión

Son necesarios más estudios para encontrar una explicación de lo que significa mantenerse sexualmente activo y el manejo del riesgo sexual.

Palabras clave: VIH/SIDA, adultos mayores, comportamiento sexual, perspectiva biopsicosocial

INTRODUCTION

In the last few years, Human Immunodeficiency Virus (HIV) cases have increased in populations over 50 years old. Research related to aging with HIV establishes older age equal to 50 or older[1,2]. The Centers for Disease Control and Prevention (CDC) reported that people older than 50 accounted for 17% of all new HIV diagnoses in 2015 in the United States and practically half of people living with HIV (PLWH) were aged 50 to 54. According to the World Health Organization (WHO), 3,944 new HIV diagnoses were reported in 2014 in people older than 50, accounting for 17.2% of total new diagnoses in Europe[3]. From now on this paper will refer to older adults as those equal or over 50 years old. The focus on older adults living with HIV (OALWH) who are 50 or older was based on 1980s CDC reports of excess morbidity and mortality among older adults[1]. Life expectancy of people diagnosed with AIDS in the 80's was around 18 months due to lack of an effective treatment, but life expectancy of OALWH is now several decades with current antiretroviral treatment[4]. However, some authors suggest that setting the age of 50 to define older age in the field of social and behavioral HIV research hinders the understanding of HIV aging[4-6]. However, medical research has found that HIV/AIDS is a model of "accelerated aging", hence OALWH may show different symptoms, such as geriatric conditions, traditionally seen in old age[7,8]. Despite of controversy of using 50 years to mark older age in the field of social and behavioral HIV research, the existence of "accelerated aging" in the HIV/AIDS context led to think that it could be a good starting point for HIV aging research.

There is some evidence available about sexual behavior in OALWH[5,9]. In aging with HIV research, attention is focused on *"exploring relations between biological aging, long-term antiretroviral use or enduring HIV infection"*[5] rather than exploring sexual behavior of OALWH aged 50. It is well known that sexual behavior is a complex intimate activity, subject to different social, cultural, moral and legal issues[11]. This complexity is greater in OALWH because of intersectional stigma: stigma from living with HIV and stigma around sexuality in the elderly[9,12]. There is little evidence showing that OALWH experience greater stigma than youths but high levels of stigma in this group are associated with depression, low levels of wellbeing and more barriers to access health care[12-14]. Despite social stereotypes about adults as sexually inactive, there is some evidence indicating that OALWH continue having an active sexual life[15,16,17]. According to Cooperman, et al., (2007)[16], HIV positive men are less sexually active and engage in significantly less risky sexual behavior than HIV negative men. Lovejoy, et al. (2008)[18] highlighted that heterosexual men were more sexually active than gay/bisexual men and women. In the case of OALWH, sexual behavior has been studied in terms of HIV risk behavior, defined as not using condoms or inconsistent use[16,17]. The use of drugs, greater importance of sex in one's life, taking sildenafil[1*], being single or having fewer HIV- related symptoms are factors associated to risky sexual activity in this age group[14,15,16].

Literature reviews on the association between social factors and sexual behavior, or exploring sexual behavior of OALWH from a more holistic perspective are scarce. A social relational perspective has emerged in the last two decades that developed a biopsychosocial approach to study elderly's sexuality[18]. For this, we have used the Biopsychosocial Model of Relationships and Sexual Expression in Adulthood, developed in 2014 by John DeLamater and Erica Koepsel[19], where the biological dimension represents only a part of the individual's sexual behavior. DeLamater and Koepsel also explores the psychological factors that influence his sexual expression and social ones, stating that they are equally important. In this

[1*] Sildenafil: a drug taken to increase blood flow to the penis and improve erectile function.

approach, factors as biology (chronic diseases or health conditions, treatment, and sexual function and activity), psychological factors (knowledge and attitudes toward sex and sexuality, emotional wellbeing) and social (marital status and romantic and sexual characteristics of the relationship) play a key role. This biopsychosocial approach has been the framework of some literature reviews involving older general population[19, 20]. We have focused on this model because it recognizes all factors that can affect sexual function, and these factors interact with each other in a dynamic system over time.

Although research investigating risky sexual behavior (having multiple sexual partners, having sex while under the influence of alcohol or drugs and unprotected sexual behaviors) among OALWH has increased, little is known about social or psychological factors affecting that behavior. Thus, to expand the research on sexual behavior, a systematic literature review was undertaken to identify the sexual behavior of OALWH aged 50 and above using a biopsychosocial approach.

METHODOLOGY

A systematic review of the literature was conducted. Given the lack of investigations of sexual behavior of OALWH aged 50 and above, the following question was addressed: 'What is known from the existing literature about factors (biological, psychological and social) related to sexual behavior among older adults living with HIV aged 50 and above?'

This systematic review was developed according to the guidelines of the PRISMA statement[21] (Figure 1). A literature search strategy was conducted in PubMed, Scopus, CINAHL and PsychInfo. Inclusion criteria were: 1) the research was led and participants were from high-income countries (Europe, North America, New Zealand and Australia), 2) published in peer-reviewed journals from 2010 to 2016, 3) in language: English, Spanish and Portuguese, 4) with at least one sample subgroup of PLWH aged 50 and above, 5) newly or lately diagnosed; 6) focus on factors influencing sexual behavior. The rationale to identify factors followed the classification of DeLamater & Koepsel[19] (see figure 2). As mentioned before, older adults were considered those aged 50 and above, according to international organizations as CDC[2,5]. Studies based on expert opinion, with no clear subsample of OALWH aged 50 and above, articles not focused on the association between sexual behavior and one of the biopsychosocial factors of Delamater and Koepsel approach, and studies with low methodological quality were excluded.

Two independent reviewers assessed each title, abstract and full text to see if the recovered references fulfilled the eligibility criteria. Disagreements and doubts were discussed, and reviewed by a MF when necessary. Each pair extracted data from the studies reviewed and placed this data into an Excel spreadsheet. Full text of all selected studies was retrieved and assessed (Flow chart in Figure 1). MF verified the extracted data and subsequent analysis.

Studies included a full text was assessed using the following tools: the STROBE for cross-sectional studies[22] and the Critical Appraisal Skills Programme for the qualitative studies[23]. Any uncertainty or disagreements were resolved by MF.

Each relevant finding of sexual behavior was classified into biological, psychological or social factors following rationale of Delamater and Koepsel approach in terms of two broad categories: staying sexually active and managing sexual risk. Discrepancies related to analysis and synthesis were discussed in regular meetings between two reviewers (RG, MF).

A total of 645 articles were initially identified, of which 148 were duplicates (see figure 1). A total of 241 articles were excluded in this stage by title. After abstract analysis, 56 met the inclusion criteria. At full-text selection stage, only 7 studies were included, all of them conducted in the United States (see table 1). Most of them were cross-sectional (n=6).

FIGURE 1. PRISMA FLOW DIAGRAM.

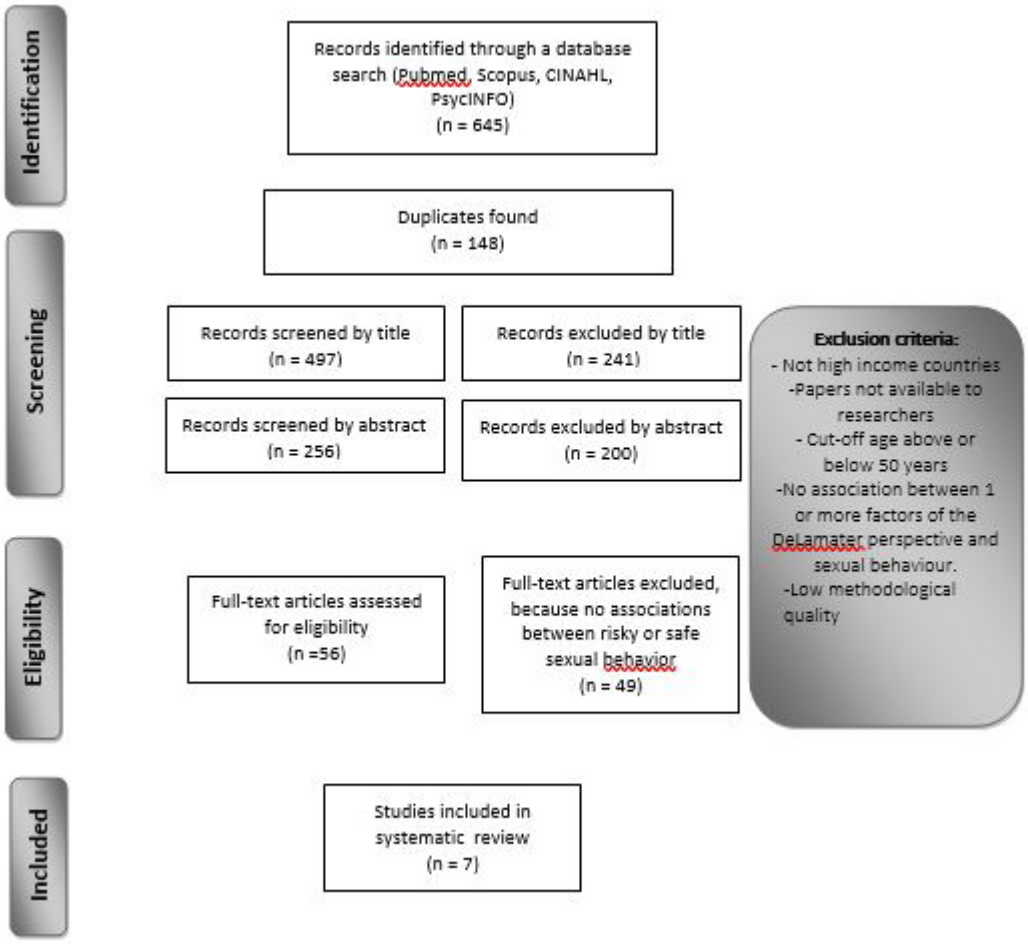


FIGURE 2. ORIGINAL BIOPSYCHOSOCIAL APPROACH BY DELAMATER AND KOEPSEL ABOUT SEXUAL BEHAVIOR OF OLDER GENERAL POPULATION.

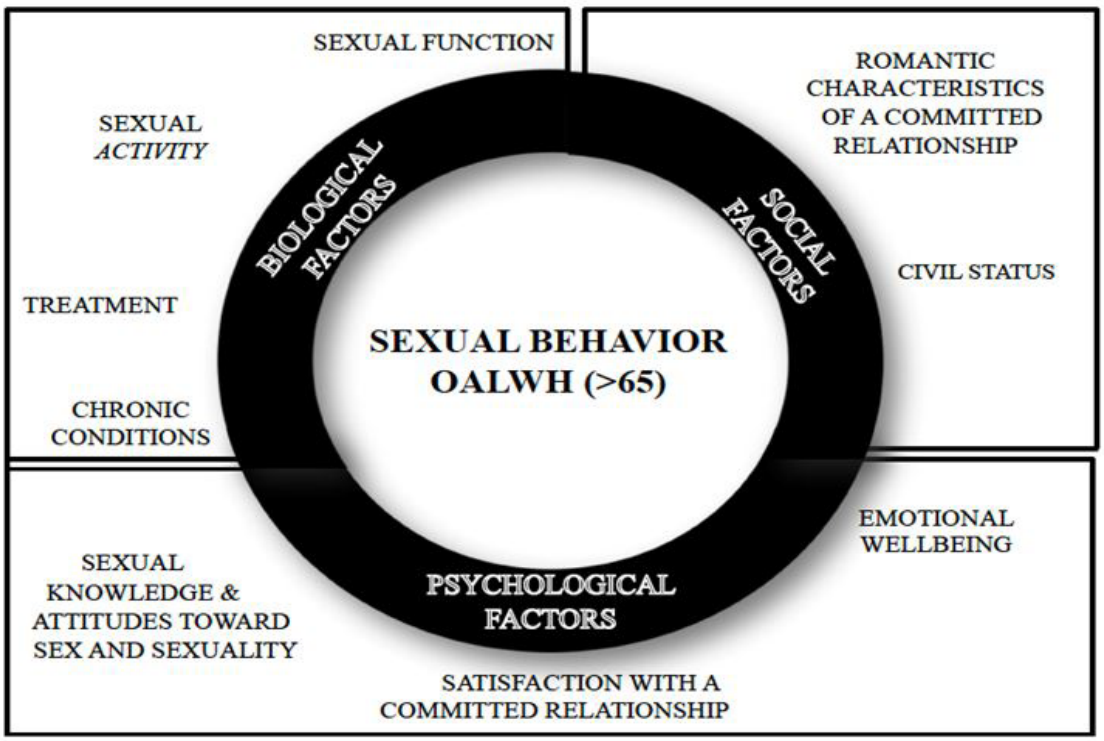


TABLE 1. SUMMARY OF STUDY FINDINGS

AUTHOR, COUNTRY & YEAR	DESIGN	AIM	ELIGIBILITY CRITERIA	PLACE OF RECRUITMENT & SAMPLE SIZE	SEXUAL INFORMA-TION	MAIN FINDINGS
Önen, et al. USA, 2010	Cross-sectional	To determine rates of recent sexual behavior, associations with high-risk sexual behaviors and rates of incident STDs among a cohort of unsolicited older individuals living in the current era of HIV-related care and to compare these variables with results from younger and middle-aged HIV-infected counterparts	• HIV-infected individuals aged 18 years and over. • Individuals who had completed an annual standard of care assessment on sexual, alcohol and drug use behaviors were included. *Different age groups but a subsample of 50 aged and older*	Outpatient Infectious Diseases clinic. City N/A. n=128	Heterosexual Men and Women (32.3%), Gay (61.3%) and Bisexuals (6.5%) Men 82,8% & Women 27,2%	STAYING SEXUALLY ACTIVE: Biological: 1. Being a woman 2. Caucasian race 3. Current CD4+ count. 4. Legal/illegal drugs use: Higher alcohol intake & current illicit drug use Social: 1. HIV disclosure related to no history of psychiatric comorbidity & incomplete STD testing. 2. Being in a current sexual relationship. MANAGING SEXUAL RISK Social 1. Consistent condom use associated to HIV disclosure
Klein, et al. USA, 2012	Cross-sectional	To examine the sexual and HIV risk practices of MSM aged 50 years and older, and compare them with those reported by MSM aged 18–39 years	• Men were searching for unprotected sex on-line. • Individuals aged 18 years and over. *Different age groups but a subsample of living with HIV 50 aged and older*	From 16 different websites. City N/A n=109	Gay: 84.4% Bisexual, 15.6% Men 100%	STAYING SEXUALLY ACTIVE Biological: 1. Number of sexual partners associated with: Level of depression. Problems because of drug use MANAGING SEXUAL RISK Biological 1. Self-identification as a “bottom” was a risk to participate in sex with internal ejaculation. 2. Risk practices as felching, unprotected anal sex, having received two penises in the anus simultaneously, encounters with multiple sexual partners), had ‘’wild” or ‘’uninhibited” sex, liked sex in saunas. Higher levels of arousal when they saw or felt ejaculatory fluids. Share a sex toy with a sex partner. Psychological 1. HIV information burnout Social: 1. Sexual abuse during childhood

AUTHOR, COUNTRY & YEAR	DESIGN	AIM	ELIGIBILITY CRITERIA	PLACE OF RECRUITMENT & SAMPLE SIZE	SEXUAL INFORMA-TION	MAIN FINDINGS
Golub, et al. USA, 2013	Cross-sectional	To apply a salutogenic, eudaimonic perspective to the prediction of risk reduction behavior among HIV-positive older adults. To examine the associations between psychological wellbeing and sexual behavior by race/ethnicity, gender and sexual orientation	• HIV positive individuals aged 50 and older. • Resided or received health care in New York City • Community-dwelling • Able to complete survey instrument in English • Not significant cognitive impairment	AIDS services Organizations public and private hospitals, and the agency's own database clients. New York City n=328	Heterosexuals (71.3%) men and women; Gay (22.3%) and Bisexuals (6.4%) men Men (78%) & Women (22%)	HAVING SEXUAL ACTIVITY Biological: 1. Legal/illegal drugs use while engaging anal or vaginal sex: Gay/bisexual more likely to use than heterosexual men & women. MANAGING SEXUAL RISK Biological 1. Protected Sex associated with AIDS diagnosis for Gay and straight men. 2. Legal/illegal drugs use associated with unprotected sex for straight men and women, but not for Gay. psychological 1. Protected sex associated with Emotional wellbeing. Personal growth (gay & bisexual men) Positive relations (gay, bisexual and heterosexual men) Purpose in life (heterosexual) Autonomy (women)
Brennan-Ing, et al. USA, 2014	Cross-sectional	To examine differences in substance use and MANAGING SEXUAL RISK behavior among older HIV-positive self-identified bisexual and gay men	• Being HIV-positive 50 years or older. • Cognitively-intact. • Sufficient English-language skills to complete the survey instrument	Community sites throughout. New York City. n=239	Gay (75.7%) and Bisexuals (24.3%) men. Men 100%	STAYING SEXUALLY ACTIVE Biological: 1. Legal/illegal drugs use to encourage sexual intercourse: Gay & bisexual men had high rates of alcohol, poppers (inhaled nitrates) marijuana and hard drugs Gay use Poppers as sexual stimulant MANAGING SEXUAL RISK Biological 1. Unprotected sex related to drugs: Lifetime crack use (gay and bisexual men) Ecstasy and current use of LSD (gay) Current use of Erectile Dysfunction medication. Current use of Poppers Social: 1. Unprotected sex associated to Low economic status

TABLE 1. SUMMARY OF STUDY FINDINGS *(CONTINUATION)*

AUTHOR, COUNTRY & YEAR	DESIGN	AIM	ELIGIBILITY CRITERIA	PLACE OF RECRUITMENT & SAMPLE SIZE	SEXUAL INFORMA-TION	MAIN FINDINGS
Grodensky, et al. USA, 2015	Qualitative	To understand specific challenges faced by older HIV-infected women in coping with the disease and its attendant stressor	• Women HIV-infected. • English-speaking. • 50 aged or older. • Receiving care at the clinic between May 2006 and November 2006	Public-hospital based infectious diseases clinic. n=15	Heterosexual women Women 100%	HAVING SEXUAL ACTIVITY Biological 1. Sexual abstinence associated with low prioritization of having sexual intercourse Psychological 1. Fear of HIV transmission and fear of HIV discrimination associated with Sexual abstinence Social 1. HIV disclosure associated to sexual abstinence and Difficulties to resuming dating 2. Not being sexually active is related to the lack of available men MANAGING SEXUAL RISK Social 1. Inconsistent condom use related to having a HIV partner (committed relationship).
Golub S, et al. USA, 2010	Cross-sectional	Examine the prevalence and correlates of sexual behavior, MANAGING SEXUAL RISK, and behavioral risk reduction strategies among a diverse sample of HIV-positive adults over age 50.	• HIV-positive individuals. • Resided in or receiving health care in New York City • Be able to complete the survey instrument in English.	AIDS services Organizations public and private hospitals, and the agency's own database clients. n= 914	Heterosexual (63.1%) Gay/ Bisexual men (36.9%) Men (70%) Women (28.9%) Trans (1.1%)	MANAGING SEXUAL RISK Biological 1. Unprotected sex related to: Being gay/ bisexual. Legal/illegal drugs use 2. Behavioral risk reduction strategies: -''Oral Sex Only" is more common in gay/ bisexual men. -''One-hundred percent condom use" is less common among gay/ bisexual men. social 1. Unprotected sex associated to Loneliness

AUTHOR, COUNTRY & YEAR	DESIGN	AIM	ELIGIBILITY CRITERIA	PLACE OF RECRUITMENT & SAMPLE SIZE	SEXUAL INFORMA-TION	MAIN FINDINGS
StarksT, et al. USA, 2015.	Cross-sectional	Examine the influence of partner type (whether main or casual) on the links between substance use and sexual behavior in older men living with HIV.	• Living with HIV and being on HIV medication • Being 50 or older • Having substance use and/or substance use related problems.	Recruitment activities included active and passive strategies, conducted both online and in person. N= 378	Gay/bisexual (58.9%) Heterosexual (41,1%) Men (100%)	STAYING SEXUALLY ACTIVE Biological 1. Detectable viral load is related to a decrease of sexual activity with a main partner. 2. Among gay/bisexual, alcohol use is associated with being sexually active with casual partners. 3. Having a main partner associated with being heterosexual. MANAGING SEXUAL RISK biological 1. Condomless sex related to Being gay/ bisexual and Severity of alcohol use. Social 1. Condomless sex related to Having sex with main partner (committed relationship) in gay/bisexual men.

AIDS = acquired immune deficiency syndrome, HIV = human immunodeficiency virus, STD = sexually transmitted diseases

The selected articles involved 2,111 individuals, with male predominance (81.9%). In studies where participants' sexual orientation was included– "being gay" was most prevalent among men (68,3%), while most women identified as heterosexual (93%). To answer the research question, we identified factors associated with sexual behavior but we also articulated these findings into two categories: staying sexually active and managing sexual risk, defining the latter as engaging in unprotected sex –inconsistent or no use of condoms–, protected sex –consistent use– and behavioral risk reduction strategies.

FINDINGS

Biological factors

Staying Sexually active

Studies focused on gay/bisexual men found that most had been sexually active and had more than one sexual partner (between 8 and 11) in the last month[24]. Most of heterosexual older adults had a main partner (primary romantic relationship) but detectable viral load decreased sexual activity[25]. On the other hand, in gay/bisexual men who searched for unprotected sex on-line, depression and drugs increased the number of recent sexual partners –the higher the depression and drug problem the higher the number of sexual partners[23]. Nevertheless, after reviewing all gender identities, being a woman was associated with having recent sexual activity[26]. Along with this, a few women without a committed romantic partner declared sexual abstinence given that sexual intercourse was not a priority for them[27]. Regardless of gender, evidence showed that all participants used drugs to encourage sexual intercourse[27]. Önen ,et al.[26] informed that the higher the consumption of alcohol, the higher the rate of sexual activity in the last 3 months ($p<0.05$) and, among gay/bisexual men, alcohol also promoted sexual activity with casual partners[25,26]. However, different patterns of drug use were found: heterosexual men and women use soft/legal drugs (e.g. alcohol, tobacco and marijuana) whereas gay and bisexual men use club drugs (e.g. poppers, methamphetamines) as well as legal drugs[29]. In addition, the relationship between drug use and sexual activity in heterosexual men and women was statistically significant (OR=0.37, $p\leq0.003$; OR=0.28; $p\leq0.018$) but not in gay or bisexual men (OR=1.38, $p=0.481$).

Managing sexual risk

Erectile Dysfunction (ED) medication was associated to unprotected sex in gay/bisexual men[28]. Among these men, self-identification as a "bottom" implied the risk practice of anal intercourse with internal ejaculation[19]. These men preferred ''wild" or ''uninhibited" sex, enjoyed sex in saunas, and reached higher levels of arousal when they saw or felt ejaculatory fluid. Most of the men in this study had unprotected sex, including sexual practices such as *felching*, receiving two penises in the anus simultaneously, encounters with multiple sexual partners, etc. Regardless of sexual orientation, unprotected sex was associated to legal and illegal drug use[24, 28, 29,30]. Among gay and bisexual men, there were different patterns of legal and illegal drugs use related to unprotected sex[28,29]. Among gay men, a positive association was identified between unprotected sex and use of crack, ecstasy, LSD, poppers and ED medication, while among bisexual men, unprotected sex was associated to lifetime crack use[28]. Nonetheless, when comparing all sexual identities, the use of legal/illegal drugs was associated to unprotected sex in straight men and women, but not in gay men. Among gay/bisexual men, *'Oral Sex Only'* was the main behavioral risk reduction strategy used while '*One-hundred percent condom use'* was the less used. However, in both gay and straight men, protected sex was linked to AIDS diagnosis[29].

Psychological factors

Managing sexual risk

Psychological factors were studied looking basically for association with managing sexual risk. Emotional wellbeing, assessed in the reviewed study with Ryff Scales of Psychological Well-Being, was associated with protected sex, but there were differences in subscales of wellbeing –personal growth, positive relations, purpose in life and autonomy– among sexual identities and safe sex[29].

The study found that protected sex was associated with: 1) personal growth in gay/bisexual men; 2) positive relations in heterosexual, gay /bisexual men, 3) purpose in life in both heterosexual men and women and 4) autonomy in women. On the other hand, unprotected sex was more common in gay/bisexual men when compared with all other sexual identities or with heterosexual men[25,30]. Klein[24] identified that the only relevant predictor to unprotected sex for men searching unprotected sex on-line was the extent to which they experienced HIV information burnout: they felt "burned" from worrying about the possibility of HIV transmission.

Staying sexually active

Only one study included data about sexual activity and psychological factors. Some women decided sexual abstinence because of fear of HIV discrimination and fear of transmitting HIV[27].

Social factors

Staying sexually active

The studies described partner as casual, main, sexual or being in a current sexual relationship (defined as having one or more sexual partners)[24-26,28,29]. The study by Klein[24] revealed that only 27.5% of men searching for unprotected sex on-line had a stable relationship in the previous month, but Starks (2015)[25] identified that having a main partner –someone with whom you maintain a primary romantic relationship– was associated with being heterosexual. Being sexually active was associated to HIV disclosure and being in a current sexual relationship[26]. However, women were more reluctant to being sexually active because of difficulties in resuming dating after HIV diagnosis: they were reluctant to initiate new romantic relationships because they feared having to reveal their HIV status due to concerns about potential stigma[27]. Some of the women studied preferred sexual abstinence over HIV disclosure. In men, difficulties in resuming dating after HIV diagnose were not studied.

Managing sexual risk

HIV disclosure was associated with consistent condom use in all sexual identities, while isolation had an impact in unprotected sex[26,30]. However, unprotected sex was also associated with lower economic status among gay/bisexual men[27] and having experienced sexual abuse in childhood/adolescence[22,19]. In addition, condom use was inconsistent in women and gay/bisexual men with a main partner or in a committed relationship[25,27].

Discussion

Factors affecting sexual decision-making in older adults living with HIV have been studied and described in two basic areas: staying sexually active and managing sexual risk. According to DeLamater and Koepsel model, the biological perspective was the main approach in both areas, but social factors played a key role in managing sexual risk.

Contrary to supposed stigma surrounding elderly's sexuality, this study confirms that OALWH are sexually active as some research highlighted before, with sexual activity ranging from being sexually active to sexual abstinence[16,17]. Nevertheless, gender and sexual orientation show differences about sexual activity and managing sexual risk due to dominance of several factors.

Before 2010, Lovejoy et al., (2008)[17] highlighted that heterosexual men OALWH were more sexually active than gay/bisexual men and women while our findings suggest a change in this behavior. Starks et al. (2015)[25] found that gay and bisexual men were more sexually active than heterosexual men and had also greater odds of engaging in condomless sex. Various evidence offer some rationale to understand why gay and bisexual men are more sexually active: the unlikeliness of HIV transmission when having undetectable viral load and having high sexual activity as identity trait in gay culture[31,32]. The PARTNER study, started in 2013 offered positive results of the use of antiretroviral therapy (ART) for prevention of HIV transmission, because there were no HIV transmission among serodiscordant heterosexual and men who have sex with men (MSM) couples when the HIV-positive partner was on ART and reported condomless sex[33]. According to Ramírez-Valles (2016)[30], in gay culture sex is the main way to still feel connected to the gay community and make friends, so being sexually active is an expression of gay identity.

Regarding condomless sex among gay men, there is the belief that unprotected sex is an expression of physical masculinity[33]. However, the opportunities for sex diminish with age. Hence, in many occasions gay older adults adopt a permissive role in sex to avoid isolation and marginalization within the community itself[31]. Wight, Harig, Aneshensel, & Detels, (2016) [32] named it as 'internalized gay ageism' or the sense that one feels depreciated because of aging in the context of a gay male identity.

Other evidence supports study findings of inconsistent condom use in all sexual identities in elderly of HIV ranging from 20% to 42%[16,17,30]. These findings could be associated with different behavioral strategies to manage sexual risk such as serosorting (engaging in unprotected anal or vaginal sex, but only with HIV-positive partners), strategic positioning (refers to MSM and is defined as practicing only unprotected anal receptive sex with serodiscordant partners) or oral sex. Oral sex is the most common strategy in older women (21 %) and gay/bisexual men (29%) while serosorting is the most common in heterosexual men (18%)[30]. It should be highlighted that no risk management strategy is more prevalent in men than in women[29].

As shown in this review, regardless of gender or sexual orientation, drugs and alcohol have a negative influence in sexual activity and strategies to manage sexual risk. In fact, illegal and legal drugs have been the most studied factor associated to unprotected sex. The role of drugs (alcohol and other legal and illegal substances) is well-documented in unprotected sex, but in this review we have identified different patterns of use in OALWH[24,26,28]. Parsons, Starks, Millar, Boonrai, & Marcotte, (2014)[35] also identifies 4 different patterns regarding gender and sexual orientation: alcohol exclusively (heterosexual women), alcohol and marijuana, alcohol and cocaine/crack (heterosexual men) and the use of multiple substances (gay/bisexual)[26,35]. Findings of this review also points to alcohol as the most common because it is usually used to manage anxiety and tension with new casual partners not typically experienced with main partners[36].

Psychosocial factors also play a role in managing sexual risk or staying sexually active. As previously shown, wellbeing and HIV disclosure were associated to consistent condom use[26,29]. However, HIV disclosure was also related to sexual abstinence due to fear of HIV-related discrimination[27]. Older adults face increased risk of HIV discrimination compared to their younger counterparts because their contemporaries judge as morally wrong behaviors related to HIV risk[12]. Thus, unprotected sex is related to and feeling isolation and emotional discomfort because of living with HIV for many years[29,30]. Additionally, the concept of HIV information burnout affects the scope of risky sex among gay men, and it should be considered when

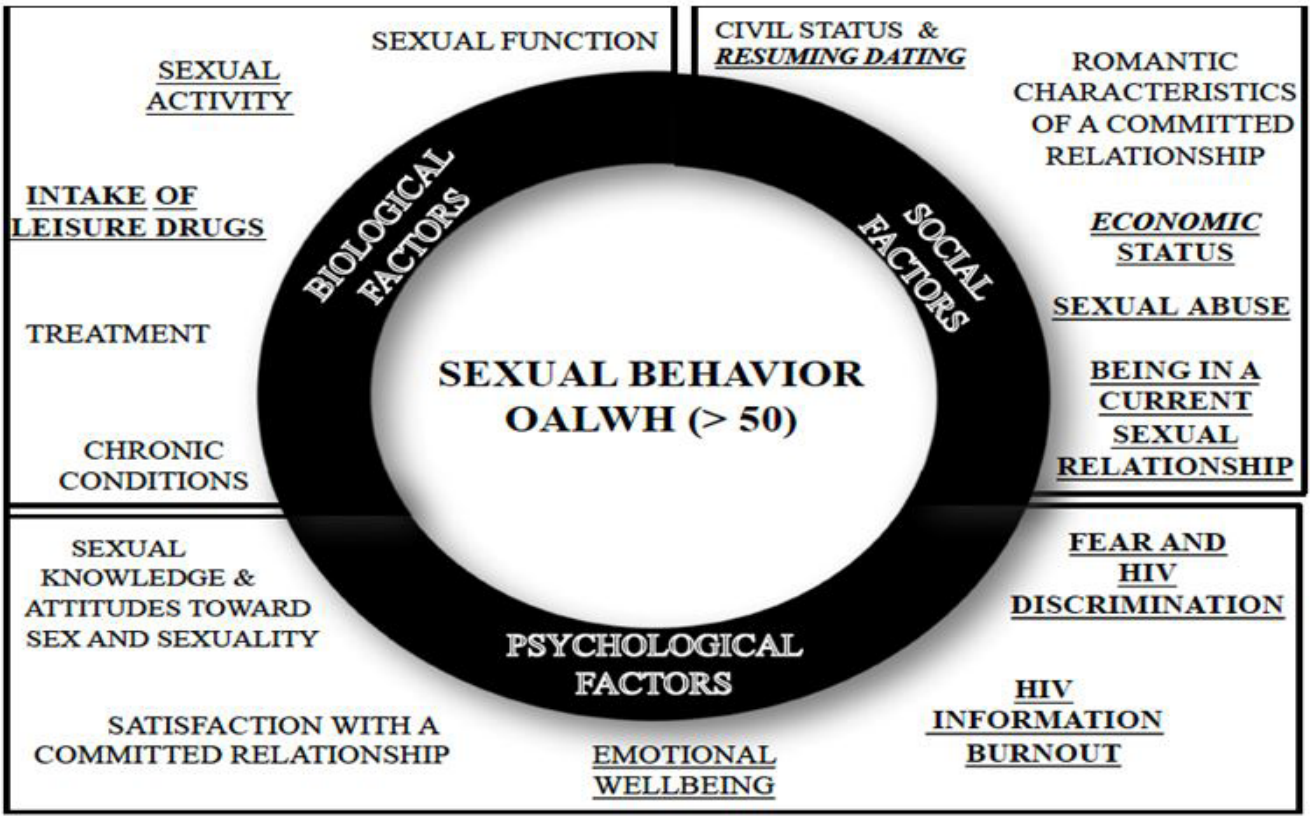
designing prevention strategies[24] specific measures aimed at stress management.

Regarding gender, more studies are focused on men due to the prevalence of HIV among MSM and their identification as key population for HIV prevention. UNAIDS[38] considers 4 key populations: gay men and other men who have sex with men, sex workers, transgender people and people who inject drugs. However, labeling gay/bisexual men as key population makes women and heterosexual men invisible. Findings are just approximative of how living with HIV affects women's sexual behavior because of the scarcity of evidence around the issue. However, both heterosexual and gay/bisexual men are more sexually active than women as is the case in HIV negative older women[30,39]. There is evidence that they are also less sexually active than men because of normal aging changes related to gender: decreased libido (43%), little vaginal lubrication (39%), and inability to reach climax (34%)[40]. In addition, after a HIV diagnosis, women report more celibacy (78%) than men (36%)[41]. Reasons for celibate are gender-related: women named loss of interest in sex, anger against and distrust of men, and the will to focus on themselves rather than in their partner; while men gave priority to fear of rejection or stigmatization, difficulties with sexual performance, and negative body image.

There are some important research and prevention implications. First, more research is needed to explore factors influencing sexual behavior of OALWH over 50 given the gaps of knowledge in this field: only 7 studies focused on this population hence they do not represent older HIV positive adults as a whole. Second, a deeper understanding of the interactions of psychosocial factors such as isolation, HIV discrimination or HIV disclosure and the management of sexual risk is imperative to develop effective prevention strategies tailored by gender and sexual orientation in this population. Messages need to be carefully addressed to sexually-empower older people who feel isolated and are afraid of HIV stigma. Third, efforts should target the group of men (heterosexual and gay/bisexual) who do not use any behavioral risk reduction strategies, and address internalized gay ageism among gay men. Fourth, greater efforts should be focusing on preventing alcohol-related harms and unprotected sex among heterosexual (men and women), and to harm reduction associated to drugs and unprotected sex among gay/bisexual men. There is also a need to further research sexual behavior of women in this age group since 50% of the world population living with HIV are women and more vulnerable to suffer from discrimination.

This review has some limitations that must be taken into consideration. Firstly, findings of this review do not represent sexual behavior of all OALWH due to overrepresentation of gay/bisexual men recruited in different places (web, community sites, public hospitals…). Secondly, the age of 50 is not identified as older adult in studies outside the HIV field. Therefore, its use may limit the validity and comparability of the findings because most literature focuses on 65 years or above. Thirdly, the target population of the biopsychosocial approach of Delamater and Koepsel were 65 years or older (see figure 2); thus, it is not specific to the sexual behavior of OALWH aged 50 or above so do not include HIV stigma or HIV disclosure as psychosocial factors (see figure 3). However, to our knowledge, it is the only providing a focused holistic approach to sexual behavior. Fourthly, eligibility criteria in the study by Klein[19] and Önen, et al.[22] described specific groups of OALWH: men who were searching for unprotected sex on-line and HIV-infected individuals who had completed an annual standard of care assessment on sexual behavior, and alcohol and drug use were included. Therefore, they do not represent older HIV positive adults as a whole. Finally, the scope of this review is limited by the available literature: most research performed to date is descriptive or es-

FIGURE 3. ADAPTATION OF DELAMATER & KOEPSEL APPROACH: BIOPSYCHOSOCIAL PERSPECTIVE OF SEXUAL BEHAVIOR OF OALWH (AGED 50 OF MORE).



Bold font: factors no included in the perspective of DeLamatter.
Underlined: factors detected associated with safe or risk sexual behavior.

says, focused on people aged 60 to 65 and not looking for factors associated to sexual behavior.

CONCLUSION

This review offers valuable information about sexual behavior of HIV elderly, but findings and recommendations made should be cautiously interpreted given the little literature available on OPLWH and the significant differences between studies (different target population and different methods exploring sexuality). Factors in decision-making of older adults living with HIV around sexual issues have been studied to come up with a description of what sexual activity or managing sexual risk mean. Biological perspective was the main approach in both issues, but social issues played a key role in the management of detected sexual risk. Most of the studies reviewed have been basically conducted summarizing factors of sexual behavior rather than looking for an interpretative explanation of what it means to stay sexually active and managing sexual risk.

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