

Prevalence of condom use among construction workers and associated factors

Prevalência do uso do preservativo por trabalhadores da construção civil e fatores associados

Prevalencia del uso de condón por los trabajadores de la construcción y factores relacionados

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ABSTRACT

Objective: to estimate the prevalence of condom use and the associated factors in construction workers. **Method:** in this cross-sectional, analytical study with 370 workers from greater João Pessoa, Paraíba, the outcome variable was condom use at last sexual intercourse. A structured questionnaire was used. Bivariate and multiple logistic regression analysis was used to identify associations between sociodemographic variables and condom use. **Results:** most participants were young, male adults, married and with little education. Estimated prevalence of condom use was 23.5% (95% CI; 19.2% - 27.8%). Individuals under 39 years old were found to be 1.82 times more likely to use condoms than individuals aged 40 years or older (OR = 1.82; 95% CI), while being married reduced the likelihood (OR = 0.26). **Conclusion:** prevalence of condom use is low among construction workers. Combined prevention is one option for controlling communicable diseases, with condoms as the main support.

Descriptors: Construction Industry; Occupational Health; Condoms; Prevalence; Nursing.

RESUMO

Objetivo: estimar a prevalência do uso do preservativo e os fatores associados em trabalhadores da construção civil. **Método:** estudo transversal, analítico, com 370 trabalhadores da grande João Pessoa, Paraíba. Considerou como variável de desfecho o uso do preservativo na última relação sexual. Utilizou-se questionário estruturado. Análise de regressão logística bivariada e múltipla foi utilizada para identificar associação entre as variáveis sociodemográficas e o uso do preservativo. **Resultados:** a maioria dos participantes é do sexo masculino, adultos jovens, casados e com baixa escolaridade. A prevalência estimada de uso do preservativo foi de 23,5% (IC 95%: 19,2% - 27,8%). Indivíduos com menos de 39 anos possuem 1,82 vezes mais chances de usar o preservativo e ser casado diminui (RC=0,26) as chances de uso. **Conclusão:** há baixa prevalência de uso do preservativo em trabalhadores da construção civil. A prevenção combinada é uma alternativa para controle das infecções transmissíveis, sendo o preservativo o principal coadjuvante.

Descritores: Indústria da Construção; Saúde do Trabalhador; Preservativos; Prevalência; Enfermagem.

RESUMEN

Objetivo: estimar la prevalencia del uso de condón y los factores asociados en trabajadores de la construcción. **Método:** en este estudio transversal y analítico con 370 trabajadores del área metropolitana de João Pessoa, Paraíba, Brazil, la variable de resultado fue el uso de condón en la última relación sexual. Se utilizó un cuestionario estructurado y análisis de regresión logística bivariada y múltiple para identificar asociaciones entre las variables sociodemográficas y el uso del condón. **Resultados:** la mayoría de los participantes fueron jóvenes, varones adultos, casados y con poca educación. La prevalencia estimada del uso de condones fue del 23,5% (IC del 95%; 19,2% - 27,8%). Se encontró que las personas menores de 39 años tenían 1,82 veces más probabilidades de usar condones que las personas de 40 años o más (OR = 1,82; IC del 95%), mientras que estar casado redujo la probabilidad (OR = 0,26). **Conclusión:** la prevalencia del uso de condones es baja entre los trabajadores de la construcción. La prevención combinada es una opción para controlar las enfermedades transmisibles, con el condón como principal apoyo.

Descritores: Industria de la Construcción; Salud Laboral; Condones; Prevalência; Enfermería.

INTRODUCTION

Condom use has prevented nearly 50 million new HIV infections since the epidemic began. Unprotected sexual intercourse is a significant risk factor for the spread of Sexually Transmitted Infections (STIs), especially HIV, worldwide. This factor, in itself, already makes the use of condoms an essential component to reduce contamination cycles¹.

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In Brazil, the use of condoms decreased, mainly among the youngest, in the age group of 15 to 24 years old, both with casual and with fixed partners². The habit of not using the barrier method has a direct impact on the increase in the number of HIV cases. In the country, 52.7% of the HIV cases occur in the age group of 20 to 34 years old³. In 2018 alone, it is estimated that 100,000 new infections occurred and that one out of five are young individuals between 15 and 24 years old⁴. In Latin America, such infections among young people represent 20% of all the new infections⁵.

Thus, thinking of the possibilities that enable reducing the prevalence of STIs, countries around the world have been striving to combat the spread of these infections. The condom has thus been the prevention means most publicized by the health policies due to its high degree of protection against the risk for the onset of STIs, especially HIV, and for effectively reducing the cycles of contamination⁶.

However, the population's access to the prevention methods herein highlighted, especially those groups vulnerable to STIs, is still a challenge faced, with efforts and attention emerging from different spheres of health. It is imperative that the municipal bodies responsible for this portfolio seek effective strategies so that condoms are available where the most vulnerable population is located, such as those who are part of the key populations and priority populations, as well as in schools, social institutions, and non-governmental organizations⁷.

The diversity of civil construction work makes it difficult to standardize or practice preventive and health promotion interventions, which are significant, on construction sites^{8,9}. As for the civil construction establishments in the last survey (2016), the Northeast had 35,923 establishments. Of these, 3,914 were located in Paraíba and 2,153 were located precisely in the capital João Pessoa¹⁰.

This is a predominantly male profession and, in this context, the presence of the male population in Primary Health Care (PHC) is less effective, even reaching invisibility rates when analyzed from a gender perspective¹¹. Recognizing this population as prone to not using this barrier method and knowing the main factors associated with this susceptibility are fundamental to direct the actions performed by the professionals acting in workers' health.

In the universe of construction workers, the inconsistent use of condoms has been debated in the literature, but few studies show good adherence to the method by this specific population^{12,13}. In their majority, they are young, sexually active, with low schooling, and submitted to constant migratory processes. Such factors favor risky behaviors like alcohol and drug consumption, multiple partners, and low adherence to condom use, making them vulnerable to STIs, including HIV^{13,14}.

Reflecting on the use of condoms by workers who are active in the Civil Construction Industry (CCI) becomes indisputable. Of the 91,86 million people aged 14 years old and over, in Brazil, about 6.6 million had jobs linked to the CCI until December 2018¹⁵.

It is essential that the occupational nurse, in partnership with the social network of these individuals, seeks, in a combined manner and with continuous and lasting interventions, to promote a discussion that guarantees comprehensive, equal, and accessible assistance in the context of sexual behavior and practices¹⁶.

In this context, identifying condom use among construction workers is an important strategy for interrupting the chain of transmission of these infections, particularly among those who potentially have less access to health services. In addition, analyzing the causes that induce workers to take safe sexual practices, their motivation for using condoms, and their concerns about sexual health are of paramount importance for the public health agenda in the country.

Therefore, the objective of this study is to identify the prevalence of condom use in the last sexual intercourse and the associated factors in construction workers in the city of João Pessoa, state of Paraíba.

METHODOLOGY

A cross-sectional and analytical study carried out from March to September 2018 with construction workers in the city of João Pessoa and its metropolitan regions (Bayeux, Santa Rita, and Cabedelo), state of Paraíba.

For the calculation of the sample size, an estimated population of 5,500 workers was considered, a prevalence estimate of 50%, recommended when the real prevalence of having or not the desired condition to be investigated is not known beforehand, estimating it as random¹⁷. Still with a 95% confidence level and a 5% error margin, resulting in a minimum sample size of 360 participants.

Individuals aged 18 years old or older, working in the role at the time of the research, were included. And the individuals who did not initiate sex or did not have sex in the last 12 months were excluded from the study. At the end

of the study, the minimum sample was extrapolated and composed of 370 workers. The sampling process was of the non-probabilistic type, obtained by convenience.

Data collection took place in the construction units themselves, through articulation with the Occupational Safety Technician, who scheduled the date and time for the meetings of the researchers and participants. Eight construction units were visited, all with vertical condominiums.

The recruitment of individuals was done during rest periods, sequentially and according to the arrival of the worker at the rest place. All the eligible workers were invited to participate in the study and were informed about its importance, objectives, risks, and benefits of participation, as well as about the freedom not to participate in the research at any time. For the individuals who participated, the Free and Informed Consent Form (FICF) was offered for reading and signing. In cases of illiteracy, the FICF was read to the employee and a witness, and the participant's signature was dactyloscopic.

The information was collected through a structured questionnaire adapted from the instrument used in the Survey of Knowledge, Attitudes and Practices in the Brazilian Population², containing sociodemographic data and possible factors associated with risk behaviors for STIs.

For data analysis, the use of male or female condoms during the last sexual intercourse was considered as an outcome variable, as both are relevant to the prevention of STIs¹⁸. Regarding the choice of the outcome variable, there are different measures to assess condom use, each with advantages and disadvantages. However, one of the indicators used in global reports to measure the prevalence of condom use is the use of condoms in the last sexual intercourse¹⁹.

The categorical variables were described in absolute numbers and percentages. The sociodemographic and behavioral variables of age (18 to 39 years old, over 39 years old), marital status (married, single/others); number of partners (one partner, two or more partners); type of partner (opposite gender, any gender); alcohol use (yes, no), and use of illicit drugs (yes, no), were used in order to investigate what the risk and protective factors are for condom use. For that, a bivariate analysis of the logistic regression model was applied, generating the Odds Ratios (ORs) with a 95% confidence interval. Statistically significant variables ($p < 0.05$) were included simultaneously in the multiple logistic regression model, with a likelihood test.

The research was approved by the institution's Ethics and Research Committee (Opinion No. 2.572.58) and respected all the ethical principles of research involving human beings²⁰.

RESULTS

Regarding the prevalence of condom use, it was observed that, of the total of 370 individuals surveyed, 87 stated they had used a condom in their last sexual intercourse, which represents a prevalence of 23.5% (95% CI: 19.2% - 27.8%) or, approximately 24 individuals for every 100 construction workers used condoms in their last sexual relation.

As for the sociodemographic characteristics, there was a predominance of male workers, 361 (97.6%); between 30 and 39 years of age, 127 (34.3%); with between five and eight years of study, 125 (33.8%). Regarding marital status, most of them were married or in a consensual union, 309 (83.5%). As for their monthly income, 220 (59.5%) workers received between one and 1.5 minimum wages, with a reference value of R\$ 954.00. The majority came from the inland of the state of Paraíba, 161 (43.5%), and 131 (35.4%) had worked in the CCI for six to 10 years.

Data related to sexual practice and condom use by construction workers are shown in Table 1.

It is noteworthy that, regarding the knowledge of male and female condoms, 365 (98.6%) and 231 (62.4%) reported knowing about it, respectively. When asked about the use of condoms in their last relation, 283 (76.5%) stated they had not used it. Regarding the frequency of condom use in the last 12 months, 181 (48.9%) answered that they never used it, and 130 (35.1%) said that they used condoms sometimes.

Data related to risky sexual behavior and condom use by the construction workers are shown in Table 2.

As for the number of sex partners in the last 12 months, 259 (70.0%) reported having a single partner, followed by two or more, 111 (30.0%). Most of the workers, 366 (98.9%), reported practicing sexual activity with people of the opposite gender.

In view of the statement that the use of alcohol or drugs can induce sexual intercourse without a condom, 323 (87.3%) agree with it. It is observed that the majority, 254 (68.6%), reported not having sexual intercourse with sex

workers (Table 2). When asked if they had received money or made payments in exchange for sex, 97 (26.2%) of the interviewees answered yes and, of these, 80 (82.5%) said they had used a condom.

TABLE 1: Knowledge, attitudes, and practice of condom use by construction workers in the city of João Pessoa and its Metropolitan Region (n = 370). João Pessoa, PB, Brazil, 2018.

Variable	n	%
Do you know the male condom?		
Yes	365	98.6
No	5	1.4
Do you know the female condom?		
Yes	231	62.4
No	139	37.6
When you think about your last sexual relation, did you use a condom?		
Yes	87	23.5
No	283	76.5
Frequency of condom use in the last 12 months?		
Always	59	16.0
Sometimes	130	35.1
Never	181	48.9
TOTAL	370	100.0

Source: Research data, 2018.

TABLE 2: Risky sexual behavior and condom use by construction workers in the city of João Pessoa and its Metropolitan Region (n = 370). João Pessoa, PB, Brazil, 2018.

Variable	n	%
Number of sex partners in the last 12 months?		
1 partner	259	70.0
≥ 2 partners	111	30.0
Type(s) of sex partner(s) in the last 12 months?		
Opposite gender	366	98.9
Any gender	4	1.1
Do you agree with the following statement: "the use of alcohol or drugs can make people have sex without using a condom"?		
Yes	323	87.3
No	47	12.7
Did you have sexual relations with a professional?		
Yes	116	31.4
No	254	68.6
Have you already had sex with someone you met on the Internet?		
Yes	26	7.0
No	344	93.0
Have you already had sex with a partner you met using your cell phone (<i>Tinder</i>, <i>Badoo</i>)?		
Yes	32	8.6
No	338	91.4
TOTAL	370	100.0

Source: Research data, 2018.

As for mobile applications, 344 (93.0%) workers did not have relations with someone they met on the Internet, as well as 338 (91.4%) workers never had sex with a partner they met on their cell phone (*Tinder*, *Badoo*, etc.), as set out in Table 2. Among the 32 (8.6%) individuals who had sex with these partners they met via these routes, 18 (56.3%) stated that they always used condoms.

Data related to the association between risk factors and condom use by the construction workers are shown in Table 3. It is important to highlight that, for all the analyses in which measures of relative risk were considered (Odds Ratio), the last category of each of the categorical variables analyzed was considered a reference.

Table 3: Association between the sociodemographic and behavioral characteristics of the construction workers in relation to condom use in their last sexual intercourse, in the city of João Pessoa and its Metropolitan Region (n = 370). João Pessoa, PB, Brazil, 2018.

Variables	Used a condom n (%)	Did not use a condom n (%)	Odds Ratio (OR)	95% CI	p-value
Age					
18-39 years old	59 (67.8)	152 (53.7)	1.82	1.10-3.01	0.03 ^(*)
≥40 years old	28 (32.2)	131 (46.3)	1		
Marital status					
Married	58 (18.8)	251 (47.5)	0.26	0.14-0.45	0.001 ^(*)
Single/Others	29 (81.2)	32 (52.5)	1		
Number of partners					
1 partner	58 (66.7)	201 (71.0)	0.82	0.49-1.36	0.52
≥ 2 partners	29 (33.3)	82 (29.0)	1		
Type of partner					
Opposite gender	85 (97.7)	281 (99.3)	0.30	0.04-2.18	0.51
Any gender	2 (2.3)	2 (0.7)	1		
Use of alcohol					
Yes	58 (66.7)	176 (62.2)	1.22	0.73-2.02	0.53
No	29 (33.3)	107 (37.8)	1		
Use of illicit drugs					
Yes	11 (12.6)	47 (16.6)	0.73	0.36-1.47	0.47
No	76 (87.4)	236 (83.4)	1		

Source: Research data, 2018. Confidence Interval (CI). 1- Reference category. ^(*)Significant result with $p < 0.05$.

Regarding the use or not of condoms in the last sexual intercourse by CCI workers and the association with sociodemographic characteristics, a significant association was observed for age and marital status. The age and marital status variables of the participants are significant in the analysis of the outcome, which is the use of condoms at the last sexual intercourse. In addition, workers aged between 18 and 39 are 1.82 times more likely to use condoms when compared to individuals aged 40 years old or over, with a maximum increase of 3.01, based on the level considered, and at the upper limit of the constructed confidence interval.

Regarding marital status, being married can decrease the chances of using condoms by up to 3.84 times when compared to the category of being single ($OR=1/0.26$), and this decrease can be up to 7.14 times. For the other variables, there was no evidence of an increase or decrease in the chances of condom use between categories.

Multiple logistic regression analysis was performed to measure the influence of these factors together. The logistic regression model equation that estimates the value of the "condom use" dependent variable with a significant result, measured using the chi-square for the likelihood test ($\chi^2 = 73.17$; DoF = 2; $p < 0.001$), in relation to the "age and marital status" independent and predictive variables was: $Logit \pi = -0.13 + (10.26 \times age) - (11.09 \times marital \ status)$. Although, when analyzed together, these two factors (one increasing the chance and the other decreasing it) seem to cancel each other out, resulting in an Odds Ratio with a zero to infinite confidence interval and non-significant p-values ($p > 0.05$).

DISCUSSION

Many factors and behaviors contribute to the spread of STIs, including reduced adherence to condom use, low socioeconomic conditions and vulnerable populations, such as truck drivers and migrant populations, as well as construction workers¹². In view of the scarcity of studies that address the use of condoms by construction workers, the

results of this research will be discussed based on the findings of other studies involving populations considered vulnerable.

In this study, it is observed that the majority of the interviewees have low schooling and low family income. A number of studies point to an association between the non-use of condoms with low socioeconomic conditions as well as a positive association between socioeconomic status and condom use among male adolescents^{21,22}. Given this, the socioeconomic variables represent an important epidemiological characteristic that can influence the adoption of condoms as a barrier method for a safe sexual practice.

The prevalence of condom use at the last sexual intercourse identified in this study was low, 87 (23.5%) (95% CI: 19.2% - 27.8%), which corroborates the results identified in other studies involving vulnerable populations^{23,24}. Most of the CCI workers did not use a condom in their last intercourse.

The fact of feeling or not susceptible may be the reason for using or not using condoms. Furthermore, consistent adherence can be related to the possibility or not of being at risk of contracting an infection²⁵. In addition, the influence of alcohol and drug use, trust in the partner, masculinity²⁶, and ignorance of the barrier method can all be factors that also interfere with condom use²⁷. In this context, it is important to develop proposals for effective interventions to encourage the use of condoms by vulnerable populations, such as construction workers.

In the present study, the older the age, the lower the adherence to condom use. This type of behavior is observed in older individuals, who tend to have sex without a condom, especially in stable relationships²⁸.

A topic that draws the attention and reflects the types of relationships in modern times with technological advances is the result of the recruitment of partners by mobile applications and the fact of not using condoms in sex relations. As an example, a Brazilian survey reported an association between higher turnover of sexual partners found by dating apps²⁹.

Regarding marital status, it was verified that the workers who are married have a lower chance of using condoms. The different relationships established, whether stable or not, can influence the adoption of condom use³⁰. There is greater difficulty in maintaining condom use in stable relationships²⁵. For most people, stable relationships represent no risk of contracting any STI and, therefore, neglect condom use³¹⁻³³, making it a challenge to design prevention strategies, mainly related to STI control.

A study developed with truck drivers pointed out the low adherence to condom use with their steady partners. Often, the stable relationship represents factors linked to trust, care, the stability of personal relationships, and the idealization of the relationship as a way of preventing different infections³⁴. Considering this scenario, individuals become more vulnerable to HIV and other STIs than those who continue to adopt the method for the prevention of STIs³⁵.

The aforementioned data are corroborated by a study developed with international migrants, which identified that the wives of migrant workers often believe that their husbands are reliable to protect them from HIV and that they have no extramarital relationship³⁶. However, a study carried out in Moscow with migrant workers showed that having a regular partner is associated with having extramarital relations without using a condom³⁷.

Based on this assumption, active listening and the promotion of a favorable environment for dialog about sexual practices are imperative in the health services, especially in workers' health services. This approach enables links and facilitates adherence to available biotechnologies⁷.

Nevertheless, condom use should be evaluated in a broad and contextualized way, given that people could report not having used a condom in a certain sexual relation, but not for that reason having been exposed to any STI, due to other modalities of prevention measures having been adopted. Consideration should be given to adopting a combination of prevention strategies, including condom use and judging how much is considered the most appropriate method³⁰.

The working and living conditions of the CCI workers tend to amplify some male behaviors associated with a higher sexual risk of contracting any STI such as: multiple sex partners, the consumption of alcoholic beverages, and having sex with sex workers without a condom. Changing these conditions or strengthening the capacity of the workers, housed in support homes, in addition to finding alternatives to deal with these difficulties, can also be the focus of prevention in workers' health. For example, there are other ways of socializing, apart from alcohol and sexual leisure³⁶.

Thus, thinking about the worker's health, the nurse is essential in any company with workers. The work environment offers various risks to the health of the individuals, which can be avoided or reduced through various protective measures. In the context of STIs, it is clear that, as they are unaware of or do not identify certain risk situations, workers are more vulnerable³⁷.

Occupational nursing, in addition to working on occupational and work-related diseases, needs to have a look at other non-occupational diseases and conditions that are transversal to workers' health. Health promotion actions in occupational nursing contribute to the empowerment of workers in their own health-disease process, with a view to building a productive and safe work environment that satisfies the economic and individual needs of the worker³⁷.

The research has limitations that must be punctuated. The first is related to the study design, since cross-sectional studies do not allow causal inferences to be made. Another limitation refers to the outcome variable, which may have introduced an information bias in the study, as the respondents may have felt embarrassed when answering questions of a sexual nature.

It is important to make it clear that this study evaluated condom use in the last sexual intercourse and that it did not measure its consistent use, as the continuity and frequency of condom use were not evaluated. For that, it would be necessary to use other measures, which was not the objective of this study. Therefore, it is possible that the prevalence of use is being overestimated, and the difference found may be less than the real difference, or even a difference cannot be identified.

CONCLUSION

The construction workers in João Pessoa, on which this study focused, showed low adherence to condom use. Being married was also negatively associated. Regarding age, it was verified that the younger the individual, the greater the chance of using a condom.

Therefore, it is concluded that, regardless of the prevention model adopted in Brazil, it is necessary to have regularity in national studies that evaluate the use of condoms in different population segments. The prevention policy must be based on a combination of strategies regarding adherence to condom use and other STI prevention methods. It is still necessary for workers working in the CCI to be inserted in public policies of care for sexual health targeted at workers.

In addition, condoms must be offered in the workplace. They must be available barrier-free, 24 hours a day, including during weekends and on holidays, in the support houses of these workers, and in the specialized health service of company workers, so that the distribution of condoms to the CCI workers implement the prevention policy in Brazil through the free supply of condoms.

It is noteworthy that combined prevention refers to the conjunction of different actions in the prevention of STIs. The best prevention method must be appropriate to the reality and context of each individual. However, the use of condoms remains the main adjuvant in prevention combined both by the availability and ease of acquiring it and by its effectiveness. After all, anyone who has a condom can use it or not, but anyone who does not have it certainly will not use it.

It is hoped that this study will contribute to the reflection on this theme and that it will stimulate the development of new research studies that will allow for a broader investigation to add data to the already existing studies, considering the importance of the health of these workers and the challenge of efficient actions for combating STIs for enabling new models of care and, thus, implementing measures that alleviate the factors that trigger the non-adoption of condom use.

REFERENCES

1. World Health Organization (WHO). Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. [Internet]. 2014 [cited 2019 Mar 07]. Available from: <http://www.paho.org/bra/images/stories/Documentos2/eng%20guias%20pop%20vul%20who-1.pdf?ua=1>
2. Ministério da Saúde (BR). Secretária de Vigilância em Saúde. Departamento de DST, Aids e Hepatites Virais. Pesquisa de conhecimentos, atitudes e práticas na população brasileira. Brasília: MS; 2011. [cited 2020 Apr 07]. Available from: http://bvsmms.saude.gov.br/bvs/publicacoes/pesquisa_conhecimentos_atitudes_praticas_populacao_brasileira.pdf
3. Ministério da Saúde (BR). Boletim Epidemiológico – HIV/Aids. Secretaria de Vigilância em Saúde. [Internet] 2019 [cited 2020 Mar 31]. Available from: <http://www.aids.gov.br/pt-br/pub/2019/boletim-epidemiologico-de-hiv-aids-2019>

4. Programa das Nações Unidas sobre HIV/aids (UNAIDS). Campanha que incentiva diálogo aberto sobre HIV e prevenção entre profissionais de saúde e jovens. [Internet]. 2019 [cited 2020 Mar 31]. Available from: <https://unaids.org.br/2019/12/unais-e-parceiros-lancam-campanha-que-incentiva-dialogo-aberto-sobre-hiv-e-prevencao-entre-profissionais-de-saude-e-jovens/>
5. World Health Organization (WHO). Status of HIV epidemic and response. [Internet]. 2019 [cited 2020 Mar 31]. Available from: https://www.paho.org/hq/index.php?option=com_docman&view=download&slug=status-of-hiv-epidemic-and-response-latin-america-and-the-caribbean-2019&Itemid=270&lang=en
6. Ministério da Saúde (BR). Boletim Epidemiológico – HIV/Aids. Secretaria de Vigilância em Saúde. [Internet]. 2018 [cited 2019 Jun 18]. Available from: <http://www.aids.gov.br/pt-br/pub/2018/boletim-epidemiologico-hiv-aids-2018>
7. Ministério da Saúde (BR). Departamento de Doenças de Condições Crônicas e Infecções Sexualmente Transmissíveis. Protocolo Clínico e Diretrizes Terapêuticas para Atenção Integral às Pessoas com Infecções Sexualmente Transmissíveis (IST). [Internet]. 2020 [cited 2019 Jun 22]. Available from: http://www.aids.gov.br/system/tdf/pub/2016/57800/pcdt_ist_final_revisado_020420.pdf?file=1&type=node&id=57800&force=1
8. Meintjes I, Bowen P, Root D. HIV/AIDS in the South African construction industry: understanding the HIV/AIDS discourse for a sector specific response. *Construct Manag Econ*. [Internet]. 2007 [cited 2019 Jun 18]; 25(3): 255-66. DOI: <https://doi.org/10.1080/01446190601071813>
9. Bowen P, Govender R, Edwards P, Cattell K. HIV testing of construction workers in the Western Cape, South Africa. *AIDS care*. [Internet]. 2015 [cited 2019 Jun 18]; 27(9): 1150-55. Available from: <https://pubmed.ncbi.nlm.nih.gov/25886973/>
10. Câmara Brasileira de Indústria da Construção (CBIC). Estabelecimentos na Construção. Número de estabelecimentos na construção civil. [Internet]. 2017 [cited 2019 Aug 05]. Available from: <http://www.cbicdados.com.br/menu/empresas-de-construcao/estabelecimentos-na-construcao>
11. Couto MT, Pinheiro TF, Valença O, Machin R, Silva GSN, Gomes R. et al. Men in primary healthcare: discussing (in) visibility based on gender perspectives. *Interface (Botucatu)* [Internet]. 2010 [cited 2019 Jun 09]; 14(33):257-70. DOI: <https://doi.org/10.1590/S1414-32832010000200003>
12. Tarkang EE, Pencille LB. Psychosocial predictor of consistent condom use among migrant road construction workers in the Southwest Region of Cameroon using the Health Belief Model. *Pan Afr Med J*. [Internet]. 2018 [cited 2019 Jun 20]; 29:215. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080963/>
13. Bowen P, Govender R, Edwards P. Validating survey measurement scales for AIDS-related knowledge and stigma among construction workers in South Africa. *BMC Public Health*. [Internet]. 2016 [cited 2019 Jun 18]; 16(1):70. Available from: <https://pubmed.ncbi.nlm.nih.gov/26803294/>
14. Sadarangani SP, Lim PL, Vasoo S. Infectious diseases and migrant worker health in Singapore: a receiving country's perspective. *J Travel Med*. [Internet]. 2017 [cited 2019 Jun 18]; 24(4). DOI: <https://doi.org/10.1093/jtm/tax014>
15. Câmara Brasileira de Indústria da Construção (CBIC). Estabelecimentos na Construção. Valor adicionado bruto – Construção civil. [Internet]. 2018 [cited 2019 Aug 05]. Available from: <http://www.cbicdados.com.br/menu/pib-e-investimento/pib-brasil-e-construcao-civil>
16. Carvalho PMRS, Guimarães RA, Moraes PA, Teles SA, Matos MA. Prevalence of signs and symptoms and knowledge about sexually transmitted diseases. *Acta Paul. Enferm. (Online)*. 2015 [cited 2019 Aug 05]; 28(1):95-100. DOI: <https://doi.org/10.1590/1982-0194201500016>
17. Cochran WG. *Sampling techniques*. John Wiley & Sons, Hoboken, 2007.
18. Holmes KK, Levine R, Weaver M. Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Organ*. [Internet]. 2004 [cited 2020 Mar 30]; 82(6):454-61. Available from: <https://www.scielo.org/article/bwho/2004.v82n6/454-461/en/>
19. Joint United Nations Programme on HIV/AIDS (UNAIDS). Global AIDS response progress reporting 2015. [Internet]. 2015 [cited 2020 Apr 01]. Available from: https://www.unaids.org/sites/default/files/media_asset/JC2702_GARPR2015guidelines_en.pdf
20. Ministério da Saúde (BR). Conselho Nacional de Saúde. Resolução n. 466/12. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Brasília (DF): CNS; 2012. [cited 2019 Aug 07]. Available from: https://bvsm.sau.gov.br/bvs/saudelegis/cns/2013/res0466_12_12_2012.html
21. Martins LB, Costa-Paiva LH, Osis MJ, Sousa MH, Pinto-Neto AM, Tadini V. Factors associated with condom use and knowledge about STD/AIDS among teenagers in public and private schools in Sao Paulo, Brazil. *Cad. Saúde Pública (Online)*. 2006 [cited 2019 Aug 07]; 22(2):315-23. DOI: <https://doi.org/10.1590/s0102-311x2006000200009>
22. Juarez F, Legrand T. Factors influencing boys' age at first intercourse and condom use in the Shantytowns of Recife, Brazil. *Stud Fam Plann*. [Internet]. 2015 [cited 2020 Apr 01]; 36(1):57-70. DOI: <https://doi.org/10.1111/j.1728-4465.2005.00041.x>
23. Castillo-Mancilla J, Allshouse A, Collins C, Hastings-Tolsma M, Campbell TB, Ma Whinney S. Differences in sexual risk behavior and HIV/AIDS risk factors among foreign-born and US-born Hispanic women. *J Immigr Minor Health*. [Internet]. 2012 [cited 2020 Apr 03]; 14(1):89-99. DOI: <https://dx.doi.org/10.1007%2Fs10903-011-9529-7>
24. Santos CMA, Oliveira JDS, Lima SVMA, Santos AD, Góes MAO, Sousa LB. Men's knowledge, attitudes and practice regarding sexually transmitted diseases. *Cogitare Enferm*. [Internet]. 2018 [cited 2020 Apr 03]; 23(1). DOI: <http://dx.doi.org/10.5380/ce.v23i1.54101>
25. Hsu HT, Wenzel S, Rice E, Gilreath TD, Kurzban S, Unger J. Understanding consistent condom use among homeless men who have sex with women and engage in multiple sexual partnerships: a path analysis. *AIDS Behav*. [Internet]. 2015 [cited 2020 Apr 03]; 19:1676-88. Available from: <https://pubmed.ncbi.nlm.nih.gov/25845531/>

26. Serra MAAO, Milhomem AB, Oliveira SB, Santos FAAS, Silva RA, Cunha MCSO, et al. Sociodemographic and behavioral factors associated with HIV vulnerability according to sexual orientation. *AIDS Res Treat*. [Internet]. 2020 [cited 2020 May 23]; 20. Available from: <http://downloads.hindawi.com/journals/art/2020/5619315.pdf>
27. Kanda L, Mash R. Reasons for inconsistent condom use by young adults in Mahalapye, Botswana. *Afr J Prm Health Care Fam Med*. [Internet]. 2018 [cited 2020 May 23]; 10(1). DOI: <https://doi.org/10.4102/phcfm.v10i1.1492>
28. Freitas JLG, Pereira PPS, Moreira KFA, Silva AD. Prevalência do não uso de preservativo entre universitários e pós-graduandos de uma universidade pública do Norte do Brasil. *Rev. Eletr. Acervo Saúde*. [Internet]. 2019 [cited 2020 May 23]; 25. DOI: <https://doi.org/10.25248/reas.e751.2019>
29. Queiroz AA, Matos MC, Araújo TM, Reis RK, Sousa AF. Sexually transmitted infections and factors associated with condom use in dating app users in Brazil. *Acta Paul. Enferm.* (Online). 2019 [cited 2020 May 23]; 32(5):546-53. DOI: <https://doi.org/10.1590/1982-0194201900076>
30. Dourado I, MacCarthy S, Reddy M, Calazans G, Gruskin S. Revisiting the use of condoms in Brazil. *Rev. bras. epidemiol.* [Internet]. 2015 [cited 2020 Apr 02]; 1:63-88. DOI: <https://doi.org/10.1590/1809-4503201500050006>
31. Plutarco LW, Meneses GO, Arruda CM, Holanda LC, Santos WS. A influência da confiança no parceiro na decisão do uso da camisinha. *Psicol. Saúde doenças*. [Internet]. 2019 [cited 2020 Apr 03]; 20(1):220-33. DOI: <http://dx.doi.org/10.15309/19psd200118>
32. Hearst N, Chen S. Condom promotion for AIDS prevention in the developing world: is it working? *Stud Fam Plann.* [Internet]. 2004 [cited 2020 Apr 02]; 35(1):39-47. DOI: <https://doi.org/10.1111/j.1728-4465.2004.00004.x>
33. Magno L, Castellanos MEP. Significados e vulnerabilidade ao HIV/aids entre caminhoneiros de rota longa no Brasil. *Rev. saúde pública* (Online). 2016 [cited 2020 May 25]; 50:76. Available from: https://www.scielo.br/pdf/rsp/v50/pt_0034-8910-rsp-S1518-87872016050006185.pdf
34. Moreira LR, Dumith SC, Paludo SS. Condom use in last sexual intercourse among undergraduate students: how many are using them and who are they? *Ciênc. Saúde Colet.* [Internet]. 2018 [cited 2020 Apr 02]; 23(4):1255-66. DOI: <https://doi.org/10.1590/1413-81232018234.16492016>
35. Golobof A, Weine S, Bahromov M, Luo J. The roles of labor migrants' wives in HIV/AIDS risk and prevention in Tajikistan. *AIDS Care*. [Internet]. 2011 [cited 2020 Apr 02]; 23(1):91-7. Available from: <https://pubmed.ncbi.nlm.nih.gov/21218281/>
36. Weine S, Bahromov M, Loue S, Owens L. HIV sexual risk behaviors and multilevel determinants among male labor migrants from Tajikistan. *J Immigr Minor Health*. [Internet]. 2013 [cited 2020 Apr 03]; 15(4): 700-10. Available from: <https://pubmed.ncbi.nlm.nih.gov/23054537/>
37. Pereira JDS, Oliveira AALD, Araújo BPD, Eloi ADC. The nurses' role with regards to the risks and vulnerabilities faced by civil construction workers. *Rev. Pesqui.* (Univ. Fed. Estado Rio J., Online). 2019 [cited 2020 May 27]. Available from: http://www.seer.unirio.br/index.php/cuidadofundamental/article/viewFile/6915/pdf_1