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RESEARCH ARTICLE (ORIGINAL)

Family nurses' self-perceived competencies: Control and prevention of Human Immunodeficiency Virus infection

Competências auto percebidas pelos enfermeiros de família: Controlo e prevenção da infeção por Vírus Imunodeficiência Humana

Competencias autopercibidas por los enfermeros de familia: control y prevención de la infección por el virus de la inmunodeficiencia humana

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Abstract
Background: Human Immunodeficiency Virus (HIV) infection is a public health issue. Family nurses play a significant role in HIV Infection Prevention and Control (IPC).
Objective: To analyze nurses' self-perceived competencies in HIV IPC and determine their association with training in the area.
Methodology: Quantitative and descriptive-correlational study. The sample was selected from family nurses from the Northern Regional Health Administration who agreed to participate. A form that included the ECAPC-VIH_CSP scale was applied. Data were analyzed through descriptive and inferential statistics in IBM SPSS Statistics, version 25.0.
Results: Nurses had an average level (M = 4.44 ± 1.24) of self-perceived competencies in HIV IPC. Nurses with specific training had higher self-perceived competence.
Conclusion: The results show that nurses had an average level of self-perceived competencies in HIV IPC. Nurses require training to develop competencies in HIV IPC, improving the quality and safety of care.

Keywords: family nurse practitioners; acquired immunodeficiency syndrome; nurse´s role; primary health care

Resumo
Enquadramento: A infeção pelo Vírus da Imunodeficiência Humana (VIH) constitui um problema de saúde pública. O Enfermeiro de Família desempenha um papel significativo na Prevenção e Controlo da Infeção (PCI).
Objetivo: Analisar a auto perceção dos enfermeiros face às competências que detêm na PCI por VIH e a sua relação com a formação na área.
Metodologia: Estudo quantitativo e descritivo-correlacional. Amostra selecionada a partir dos enfermeiros de família da Administração Regional de Saúde do Norte que aceitaram participar no estudo. Utilizou-se um formulário que integrou a ECAPC-VIH_CSP. Recorreu-se à estatística descritiva e inferencial através do IBM SPSS Statistics, versão 25.0.
Resultados: Os enfermeiros apresentaram um nível medio (M = 4,44 ± 1,24) de auto perceção de competências na PCI por VIH. Os enfermeiros com formação específica apresentam maior perceção da competência.
Conclusão: Os resultados evidenciam um nível medio de competências na PCI por VIH auto percebidas pelos enfermeiros. Conclui-se da necessidade da formação dos enfermeiros para o desenvolvimento das competências para a qualidade e segurança na PCI por VIH.

Palavras-chave: enfermeiras de família; síndrome da imunodeficiência adquirida; perfil de competências de enfermeiros; cuidados de saúde primários

Resumen
Marco contextual: La infección por el virus de la inmunodeficiencia humana (VIH) es un problema de salud pública. El enfermero de familia desempeña un papel importante en la prevención y el control de las infecciones (PCI).
Objetivo: Analizar la autopercepción de los enfermeros sobre sus competencias en PCI del VIH y su relación con la formación en este ámbito.
Metodología: Estudio cuantitativo y descriptivo-correlacional. Muestra seleccionada entre los enfermeros de familia de la Administración Sanitaria Regional del Norte que aceptaron participar en el estudio. Se utilizó un formulario que integró el ECAPC-VIH_CSP. Se utilizó la estadística descriptiva e inferencial a través del IBM SPSS Statistics, versión 25.0.
Resultados: Los enfermeros presentaron un nivel medio (M = 4,44 ± 1,24) de autopercepción de competencias en la PCI del VIH. Los enfermeros con formación específica mostraron una mayor percepción de la competencia.
Conclusión: Los resultados mostraron un nivel medio de competencias autopercibidas en la PCI del VIH entre el personal de enfermería. Se concluye que es necesario formar al personal de enfermería para que desarrolle competencias de calidad y seguridad en la PCI del VIH.

Palabras clave: enfermeras de familia; síndrome de inmunodeficiencia adquirida; perfil de competencia de las enfermeras; atención primaria de salud

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Introduction

Human Immunodeficiency Virus (HIV) is a public health problem worldwide, with an impact not only on health but also at an economic and demographic level. Since HIV was identified in the 1980s, 78 million people have become infected. Today, it affects more than 2.3 million people in Europe (European Centre for Disease Prevention and Control [ECDC] & World Health Organization, 2022). Changes have occurred over time that have transformed the course of this infection. With the introduction of combination antiretroviral therapy, HIV infection became a chronic disease (White House Office of National AIDS Policy, 2021), giving people with this infection a new and promising approach that increases their life expectancy (Dutra et al., 2019).

Primary Health Care (PHC) is essential in this process since it is the first point of contact with health care for most of the population due to its proximity to citizens. However, there is some difficulty in organizing and decentralizing screening and care for HIV infection prevention and control (IPC; Araújo et al., 2018; Guedes et al., 2021). There is an urgent need to train nurses to acquire the necessary skills to provide safe and quality care to individuals, families, and communities, monitoring the course of HIV infection and effectively controlling it. It is important to promote and maintain healthy behaviors, control this infection, and change the response of health services (Barbosa et al., 2020; Guedes et al., 2021; Velásquez et al., 2020).

Thus, there is a need to assess nurses' perceptions of their competencies related to the development of counseling and health education actions for HIV IPC in PHC settings. Nurses are not only influenced by their knowledge or training but also by their emotions, motivations, attitudes, and professional behaviors (Araújo et al., 2018; Barbosa et al., 2020; Guedes et al., 2021; Silva et al., 2017).

This study aimed to identify nurses' perceptions of their competencies in HIV IPC and analyze their association with training in this area.

Background

The normalization of HIV infection and its screening provided an optimistic view offered by the different scientific advances and increased the longevity and quality of life of people with HIV (Dutra et al., 2019). In this continuous effort to improve indicators, the Joint United Nations Programme on HIV/AIDS (UNAIDS, 2015) launched the 95-95-95 targets to end the AIDS pandemic by 2030: 95% of those living with HIV to know their status, 95% of those who know their status to be on treatment, and 95% of those on treatment to be virally suppressed. To this end, the Portuguese Directorate-General for Health (2014) recommends HIV testing to all persons between 18 and 64 years of age and in specific subpopulations, regardless of age, as provided by law. The implementation of organized strategies for HIV IPC has contributed significantly to this progress. The good practices of health professionals contributing to effective IPC over these decades are fundamental in this process. However, there is still much to be done in terms of HIV IPC, namely the decentralization of testing services for greater accessibility, the implementation of a policy of permanent education of the population by family nurses, the creation of institutional incentive policies, and the training of health professionals (Silva et al., 2017; Velásquez et al., 2020).

The family nurse is thus "the nursing professional who, as part of a multidisciplinary health team, takes responsibility for providing comprehensive nursing care to families, at all stages of the life cycle and in all community settings" (Decree-Law No. 118/2014, p. 4070), contributing to HIV IPC. However, it is necessary to train professionals and keep them motivated and empowered to implement good health practices in this area of intervention (Araújo et al., 2018; Thomas et al., 2021). Studies should be conducted to assess nurses' knowledge, attitudes, and behaviors related to health promotion and HIV IPC (Silva et al., 2017; Velásquez et al., 2020).

Research question/Hypothesis

What are nurses' self-perceived competencies for HIV IPC in PHC?

There is an association between specific training on HIV IPC and self-perceived competencies.

Methodology

This descriptive-correlational study aimed to identify family nurses' perceptions of their HIV IPC competencies and analyze their association with training in this area. The participants were 125 nurses selected by convenience sampling from the nurses working in Family Health Units and Personalized Health Care Units of the Health Care Clusters of the Northern Region of Portugal.

For data collection, a form was applied to the participants between 15 December 2019 and 15 January 2020 using the Google Forms online tool. The form included questions about sociodemographic and professional characteristics, training on HIV, and a scale for assessing family nurses' perceptions of competencies related to HIV IPC in PHC settings *(Escala de Avaliação da Perceção de Competências dos Enfermeiros em contexto de Cuidados de Saúde Primários no Controlo da Infeção VIH/Sida* [ECAPC-VIH_CSP]; Lima, 2020). The ECAPS-VIH_CSP showed good psychometric characteristics (Cronbach's α of 0.936). It consists of 19 items that assess knowledge and competencies on a Likert-type scale from 1 to 7, where 1 represents the lowest level of knowledge, resource, or intervention (Lima, 2020). It is divided into four dimensions: (i) Competencies for preventing and reducing HIV infection complications; (ii) Competencies for administering rapid HIV tests; (iii) Knowledge about epidemiology, prophylaxis, and standards; and (iv) Competencies for promoting rapid HIV testing. The Kaiser Meyer-Olkin value was 0.895 (Lima, 2020).

Data were analyzed through descriptive and inferential statistics using IBM SPSS software, version 25.0 for Windows.

This study was approved by the Ethics Committee where

the study was conducted (Opinion no. 120/CE/JAS, 13 December 2020) and complied with the ethical principles of research involving human subjects.

Results

This study included 125 participants, 76.8% of whom were women (*n* = 96), with a mean age of 43.31 ± 7.4 years. Most participants had a 4-year undergraduate degree (*n* = 100; 80%), followed by a master's degree (*n* = 23; 18.4%). Two participants had a 3-year undergraduate nursing degree. Most participants worked in Family Health Units (*n* = 96; 76.8%), had a mean professional experience of 19.95 ± 6.9 years, and a mean professional experience in PHC of 14.26 ± 6.3 years. A total of 49.6% of participants were specialists (*n* = 62), most of whom were community nursing specialists (*n* = 21; 33.87%), followed, in descending order, by mental health and psychiatric nursing specialists (*n* = 13; 20.97%), child and pediatric nursing specialists (*n* = 10; 16.13%), maternal and obstetric nursing specialists (*n* = 9; 14.52%), rehabilitation nursing specialists (*n* = 8; 12.9%), and one medical-surgical nursing specialist. Nurses' perceptions of their competencies for HIV IPC in PHC through the application of the ECAPC-VIH_CSP differed regarding the mean scores between the items and in the dimensions (Table 1). The total scale had a mean of 4.44 ± 1.24, which revealed an average level of knowledge and competencies. The dimension Competencies for preventing and reducing HIV infection complications had the highest mean level of knowledge and competencies (*M* = 4.97 ± 1.32), followed by Knowledge about epidemiology, prophylaxis, and standards (*M* = 4.24 ± 1.46), Competencies related to the performance of rapid HIV tests (*M* = 4.14 ± 1.57), and, finally, Competencies for promoting rapid HIV testing" (*M* = 3.97 ± 1.58).

Table 1

Mean and standard deviation of the items, dimensions, and total score of the Escala de Avaliação da Perceção de Competências dos Enfermeiros em contexto de Cuidados de Saúde Primários

Items	Mean	Standard deviation
1. I provide health education interventions to inform and sensitize my clients about HIV infection	4.81	1.754
2. I am able to promote adherence to healthy lifestyles among people with HIV	5.05	1.549
3. I assess my clients' sexual behaviors and intervene	5.25	1.517
4. During the rapid HIV test, I explain the procedures and the strategies that will be adopted if the test result is positive	4.78	1.958
5. If the result of the rapid HIV test is reactive, I encourage my clients to inform their sexual partners	4.52	2.062
6. I am able to develop strategies to control HIV infection	5.08	1.473
7. I am aware that HIV testing is accompanied by counseling	5.28	1.790
8. I am able to communicate a reactive HIV test result	3.93	2.126
9. I have time to provide counseling to people undergoing rapid HIV testing	3.54	1.869
10. If clients are reluctant to get tested, I encourage them to express their feelings	4.71	1.840
11. I am aware of social partners that support people with HIV	3.73	1.829
12. After a negative HIV test result, I evaluate possible misconceptions about immunity, reinforcing the several strategies of combined prevention	4.80	1.782
13. I know about Post-Exposure Prophylaxis	4.38	1.878
14. I know about Pre-Exposure Prophylaxis	4.01	2.112
15. I know about the epidemiologic profile of HIV infection in my ACES	3.43	1.696
16. I am aware of DGS standards and guidelines to control HIV infection	5.14	1.623
17. I recommend the rapid HIV test to people who seek the health team for diagnosis or treatment of tuberculosis	3.92	1.937
18. I recommend the rapid HIV test to all my clients	3.52	1.716
19. I recommend the rapid HIV test to people who seek the health team for diagnosis or treatment of other sexually transmitted infections	4.46	1.886
Dimensions		
Competencies for preventing and reducing HIV infection complications (items: 3, 4, 10, 12, 13, 17, 19)	4.97	1.32
Competencies for administering rapid HIV tests (items: 11, 14, 15, 16, 18)	4.14	1.57
Knowledge about epidemiology, prophylaxis, and standards (items: 1, 2, 5, 6)	4.24	1.46
Competencies for promoting rapid HIV testing (items: 7, 8, 9)	3.97	1.58
Total Scale	**4.44**	**1.24**

Note. HIV = Human Immunodeficiency Virus; DGS = Direção Geral da Saúde; ACES = Agrupamento de Centros de Saúde.

Most participants (*n* = 88; 70.4%) reported having had training on HIV/AIDS, of whom 80.7% (*n* = 71) reported in-service training, 8% reported training in a conference, 6% reported training through an academic course, and four reported having had training in another setting. Regarding the average duration of training, 64.8% of participants (*n* = 57) reported having had between 1 and 10 hours of training, 11.4% (*n* = 10) between 11 and 20 hours, and 10.2% more than 20 hours. The remaining 13.6% of the participants did not indicate the number of hours.

The Mann-Whitney *U*-test was used to analyze the association between nurses' training on HIV and their self-perceived competencies, revealing statistically significant differences in all dimensions of the ECAPC-VIH_CSP. Table 2 shows that HIV and AIDS training is associated with higher competence (knowledge and competencies).

Table 2

Association between training on HIV/AIDS and the dimensions and total score of the Escala de Avaliação da Perceção de Competências dos Enfermeiros de Família em contexto de Cuidados de Saúde Primários

Dimensions and total scale	Mean value with training	Mean value without training	*Z* (Mann-Whitney *U*-test)	Significance (*p*)
Competencies for preventing and reducing HIV infection complications	68.83	46.76	3.254	**0.001**
Competencies for administering rapid HIV tests	68.26	50.49	2.507	**0.012**
Knowledge about epidemiology, prophylaxis, and standards	68.01	51.08	2.389	**0.017**
Competencies for promoting rapid HIV testing	67.98	51.55	2.377	**0.017**
Total Scale	69.73	47.00	3.202	**0.001**

Note. HIV = Human Immunodeficiency Virus; *Z* = Result of the Mann-Whitney *U*-test; *p* = Significance level.

Discussion

This study concluded that family nurses with a mean of 20 years of professional experience and 14 years in PHC had an average self-perceived competence, which reveals the need for greater investment in nursing training in this scientific area, as mentioned by several authors (Araújo et al., 2018; Thomas et al., 2020; Tshering et al., 2020). The results align with those found by Boakyea and Mavhandu-Mudzusic (2019) in a sample of 247 nurses from Ghana whose knowledge and attitudes were also satisfactory. However, the results of this study are lower than those obtained by Ehsanul Huq et al. (2019) in a sample of nurses with 1 to 5 years of experience in the provision of direct care to people with HIV (78.4%), who obtained higher scores of overall knowledge and attitudes (3.25/5 and 3.42/5, respectively). On the other hand, in Brazil, Barbosa et al. (2020) concluded that health professionals' self-reported counseling practices for HIV infection prevention were inadequate, indicating the need to intensify health professionals' awareness and training. In this study, the competencies for administering rapid HIV tests (the second dimension with the lowest mean) were sufficient. This result is corroborated in a qualitative study (Araújo et al., 2018) conducted with nine PHC nurses in Recife (Brazil). Those authors found challenges in rapid HIV tests, namely in training for pre- and post-test counseling and the need to improve health education activities. A study conducted with family nurses in Brazil (Silva et al., 2017) found that nurses experienced difficulties related to the lack of participation of other professionals in the training process and the communication of reactive test results. The Competencies for promoting rapid HIV testing are associated with the dimension Competencies for administering rapid HIV tests, with a lower, insufficient level of competence. These results can be compared to those of a study conducted with general practitioners in Belgium that reported several barriers to professional-initiated HIV testing, including personal discomfort, fear of recommending the HIV test, limited knowledge of the benefits of early HIV diagnosis, and lack of guidelines and time (Apers et al., 2020). The results of this study reinforce the need for nurses to acquire more skills for the massive implementation of HIV screening according to Standard No. 58/2011 (DGS, 2014) and meet the 95-95-95 targets (UNAIDS, 2015).

In Kenya, Smith et al. (2016) identified the need for greater investment in nurse capacity building. It is critical to ensure that all nurses are prepared to provide comprehensive HIV care and treatment services. This study concluded that more training on HIV is positively associated with greater competence. Training processes are known to create appropriate and favorable environments for professional development, influencing the safety and quality of patient care (Thomas et al., 2021).

The dimension Competencies for preventing and reducing HIV infection complications had the highest mean score in all dimensions. Health education is paramount to inform and raise patients' awareness of this infection. It will increase patient literacy and, consequently, influence the early initiation of antiretroviral therapy that can lead to viral suppression (Treatment as Prevention),

thus reducing the size of the latent HIV reservoir, the main barrier to HIV cure, and preserving the patient's immune system (Rouleau et al., 2019).
The limitations of this study include the nonprobability sample size and selection, which limited the extrapolation of the results to PHC nurses. Therefore, further research studies are recommended. The inclusion of relevant topics related to HIV and AIDS in nursing curricula and continuous training, as well as guided practical training, can increase nurses' knowledge and attitudes toward patient care and enhance HIV IPC through structured and integrated networking (Araújo et al., 2018; Guedes et al., 2021; Silva et al., 2017; Thomas et al., 2021).

Conclusion

As a discipline of knowledge and practice, nursing should base its procedures on scientific evidence that supports the assessment of both patients' and professionals' needs. Only then is it possible to achieve safe and high-quality patient care and effective results from these interventions. Since HIV infection is a constant priority in the national and international health agenda and PHC is the main gateway to the national health system, the theoretical framework described and explored this issue in PHC settings and highlighted the implications for individuals, families, and professionals, as well as the competencies related to HIV IPC.
This study concluded that PHC nurses have an average level of self-perceived competencies related to HIV IPC. It also revealed a positive association between family nurses' training and increased knowledge and competencies related to the HIV IPC.
Future studies should assess nurses' self-perceived competencies with a larger sample and in different contexts. This study aims to clarify nurses' perceptions of the strategies related to HIV IPC in PHC settings, raising these professionals' awareness to their importance and improving the quality of their professional practice as a result of greater investment in training in this specific area.
Through the identification of key priority areas for intervention in HIV IPC using research, it is possible to provide orientation to training. This study aims to contribute to the development of nurses' competencies related to HIV IPC and promote the link between the quality and safety of care in different health settings with a view to meeting the 95-95-95 targets through the massive implementation of HIV screening in PHC.

Author contributions

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