HELLENIC OPEN UNIVERSITY

School of natural sciences and technology

Master of Science in Epidemiology

Postgraduate Dissertation

"Association between HIV and cancer incidence in people living with HIV, a systematic literature review and meta-analysis"

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Patras, Greece, January 2026

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Abstract

As life expectancy has increased in the antiretroviral therapy (ART) era, people living with HIV (PLWH) face a growing burden of non–communicable diseases, with cancer emerging as a major cause of morbidity and mortality. This master's thesis aimed to systematically review and synthesise evidence on cancer incidence among PLWH compared with the general population and with HIV–uninfected individuals.

A systematic literature review was conducted in accordance with established methodological guidelines. Quantitative synthesis was restricted to studies reporting SIRs, which compare observed cancer incidence in PLWH with expected incidence in the general population. Meta–analyses showed substantially elevated incidence of AIDS–defining cancers, including Kaposi sarcoma, non–Hodgkin lymphoma, and cervical cancer, among PLWH. Increased incidence was also observed for several non–AIDS–defining cancers, particularly anal cancer, Hodgkin lymphoma, liver cancer, and lung cancer. In contrast, findings for breast, colorectal, and prostate cancer were heterogeneous, with no consistent evidence of excess risk. Although substantial between-study heterogeneity was present, the direction of association was generally consistent for infection-related cancers. Narrative synthesis of studies comparing PLWH with HIV–uninfected populations broadly supported these findings, while studies reporting incidence rates alone consistently demonstrated higher absolute cancer incidence among PLWH.

In conclusion, this thesis highlights cancer as a persistent and important health burden among PLWH in the modern ART era. The findings emphasise the need for integrated HIV and cancer prevention strategies, including vaccination against oncogenic viruses, treatment of viral hepatitis, smoking cessation, and tailored cancer screening. Further research from underrepresented regions and with harmonised reporting is required to better characterise the global cancer burden among PLWH and to inform targeted prevention efforts.

Keywords

PLWH, cancer, incidence, AIDS–defining cancers, non–AIDS–defining cancers

“Σχέση μεταξύ του HIV και της συχνότητας εμφάνισης καρκίνου σε άτομα που ζουν με HIV, μία συστηματική ανασκόπηση της βιβλιογραφίας και μετα-ανάλυση”

Κωνσταντίνα Χατζηκωνσταντινίδου

Περίληψη

Καθώς το προσδόκιμο ζωής έχει αυξηθεί στην εποχή της αντιρετροϊκής θεραπείας (ART), τα άτομα που ζουν με HIV (PLWH) αντιμετωπίζουν ένα αυξανόμενο φορτίο μη μεταδοτικών νοσημάτων, με τον καρκίνο να αναδεικνύεται ως σημαντική αιτία νοσηρότητας και θνησιμότητας. Στόχος της παρούσας μεταπτυχιακής διπλωματικής εργασίας ήταν η συστηματική ανασκόπηση και σύνθεση της διαθέσιμης βιβλιογραφίας σχετικά με τη συχνότητα εμφάνισης καρκίνου στα άτομα που ζουν με HIV, σε σύγκριση με τον γενικό πληθυσμό και με HIV-αρνητικά άτομα.

Πραγματοποιήθηκε συστηματική ανασκόπηση της βιβλιογραφίας σύμφωνα με καθιερωμένες μεθοδολογικές οδηγίες. Η ποσοτική σύνθεση περιορίστηκε σε μελέτες που ανέφεραν τυποποιημένους λόγους επίπτωσης (Standardized Incidence Ratios, SIRs), οι οποίοι συγκρίνουν την παρατηρούμενη επίπτωση καρκίνου στους PLWH με την αναμενόμενη επίπτωση στον γενικό πληθυσμό. Οι μετα-αναλύσεις έδειξαν σημαντικά αυξημένη επίπτωση των καρκίνων που σχετίζονται με το AIDS, συμπεριλαμβανομένου του σαρκώματος Kaposi, του μη Hodgkin λεμφώματος και του καρκίνου του τραχήλου της μήτρας. Αυξημένη επίπτωση παρατηρήθηκε επίσης για αρκετούς καρκίνους που δεν σχετίζονται με το AIDS, ιδίως για τον καρκίνο του πρωκτού, το λέμφωμα Hodgkin, τον καρκίνο του ήπατος και τον καρκίνο του πνεύμονα. Αντίθετα, τα ευρήματα για τον καρκίνο του μαστού, του παχέος εντέρου και του προστάτη ήταν ετερογενή, χωρίς σαφή ένδειξη συνολικά αυξημένου κινδύνου. Παρότι παρατηρήθηκε σημαντική ετερογένεια μεταξύ των μελετών, η κατεύθυνση της συσχέτισης ήταν γενικά συνεπής για τους καρκίνους που σχετίζονται με λοιμώξεις. Η περιγραφική σύνθεση μελετών που συνέκριναν τους PLWH με HIV-αρνητικούς πληθυσμούς υποστήριξε σε γενικές γραμμές τα παραπάνω ευρήματα, ενώ μελέτες που ανέφεραν μόνο δείκτες επίπτωσης κατέδειξαν σταθερά υψηλότερη απόλυτη επίπτωση καρκίνου στους PLWH.

Συμπερασματικά, η παρούσα εργασία αναδεικνύει τον καρκίνο ως ένα επίμονο και σημαντικό πρόβλημα υγείας για τους PLWH στην εποχή της σύγχρονης ART. Τα ευρήματα υπογραμμίζουν την ανάγκη για ολοκληρωμένες στρατηγικές πρόληψης του HIV και του καρκίνου, συμπεριλαμβανομένου του εμβολιασμού έναντι ογκογόνων ιών, της πρόληψης και θεραπείας της ιογενούς ηπατίτιδας, της διακοπής του καπνίσματος και του εξατομικευμένου προληπτικού ελέγχου για καρκίνο. Απαιτείται περαιτέρω έρευνα από υποεκπροσωπούμενες περιοχές και με εναρμονισμένη αναφορά αποτελεσμάτων, προκειμένου να χαρακτηριστεί

καλύτερα το παγκόσμιο φορτίο καρκίνου στα άτομα που ζουν με HIV και να υποστηριχθούν στοχευμένες παρεμβάσεις πρόληψης.

Λέξεις – Κλειδιά

Άτομα που ζουν με HIV (PLWH), καρκίνος, επίπτωση, καρκίνοι που σχετίζονται το AIDS, μη καθοριστικοί για το AIDS καρκίνοι

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