

Use of health literacy, health information literacy, and information literacy in research: An analysis of scholarly papers on higher education indexed in PubMed

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This study explores how the terms *Health Literacy (HL)*, *Health Information Literacy (HIL)*, and *Information Literacy (IL)* are conceptualized in scholarly literature, related to higher education, and investigates their conceptual overlaps. Through a systematic literature search using the terms; HL, HIL and IL, a total of 202 scholarly papers indexed in PubMed were retrieved and studied. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were thematically analyzed. In titles, the literacy concepts appeared as: HL=192 (95.1%); IL=8 (3.9%); HIL=2 (1.0%). Within the full text, the concepts appeared as: HL=195 (96.5%); HIL=86 (42.6%); IL=74 (36.6%). A conceptual overlap was identified in 116 (57.4%) papers, while in 86 (42.6%) papers, concepts were discussed in isolation. According to chi-square tests, papers basically focusing on HIL ($\chi^2 = 48.159, p < 0.001$) and IL ($\chi^2 = 45.998, p < 0.001$) showed a significant conceptual overlap among HL, HIL, and IL. However, papers basically focusing on HL ($\chi^2 = 0.000, p = 1.0$) showed no significant conceptual overlap. By thematically analyzing the fundamental nature of all studies, three major themes were extracted: (a) *Incorporation of HL, HIL, and IL into the higher education curriculum*, (b) *HL/IL/HIL represented in terms of Digital Literacy*, and (c) *Conceptual role of 'HL/IL/HIL for health awareness in university students*. Considering the methodologies, 89 (44.1%, SD ≈ 7.22) examined how HL/HIL/IL are linked to healthy habits: 77 (38.1%, SD ≈ 6.57) focused on measuring students' HL levels: 31 (15.3%, SD ≈ 3.29) explored how HL/HIL/IL relates to students' willingness to seek professional support for health concerns; 5 (2.5%, SD ≈ 2.21) focused on validating health literacy tools. Accordingly, HL is the dominant literacy term identified within the study sample, while HIL and IL were under-represented. Studies focusing on HIL and IL have adopted a multi-literacy perspective in their conceptual theories. Comparatively, HL is discussed in isolation. Limited focus on validating health literacy assessment tools was also a notable gap observed. It is recommended to adopt HIL as the most suitable concept for integrating HL and IL. Also, it is recommended that future research explore the health information-seeking behaviour of university students more, as it did not emerge as a separate theme.

Keywords: *Health Literacy (HL), Health Information Literacy (HIL), Information Literacy (IL), Higher education, research, PubMed*