Artificial Intelligence Education for Medical Students: A Systematic Review

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I. INTRODUCTION

In the recent literature, several groups have advocated for the incorporation of artificial intelligence (AI) training and literacy into medical curricula to prepare future physicians for its use. [1- 3] Currently, there is no uniform curriculum incorporated into medical training, which may be ascribed to obstacles such as the selection of topics with the proper breadth and depth. This systematic review seeks to identify and compile the existing evidence-based recommendations as key steps towards an AI curriculum in undergraduate medical education.

II. METHODS

MEDLINE, EMBASE, CINAHL, ERIC, NCBI, and Web of Science were searched from database inception to May 2022 for articles addressing AI education in undergraduate medical education (UGME). The search terms of "medical education", "artificial intelligence", "medical curriculum", and "medical program" were used and combined with boolean operators "AND", "OR", and "ADJACENT". The inclusion and exclusion criteria for this study were determined *a priori;* studies about UGME with fair quality or higher using the Newcastle-Ottawa scale were included. A thematic analysis was performed to identify core themes.

III. RESULTS

The original search yielded 991 studies after duplicates were removed. After title, abstract, full-text screening, and reference mining, 38 studies were included for analysis. The studies were separated into two categories: survey (n = 18) and interventional (n = 21). A thematic analysis identified six themes: ethics (n = 11, 28.9%), theory and application (n = 15, 39.5%), communication (n = 11, 28.9%), collaboration (n = 7, 18.4%), quality improvement (n = 9, 23.6%), and perception and attitude (n=3, 7.9%). Within ethics, sub-themes of patient and data ethics emerged. Theory and application was further divided into knowledge needed for practice and for development. Communication was stratified as being for clinical decision-making, for implementation, and for knowledge dissemination.
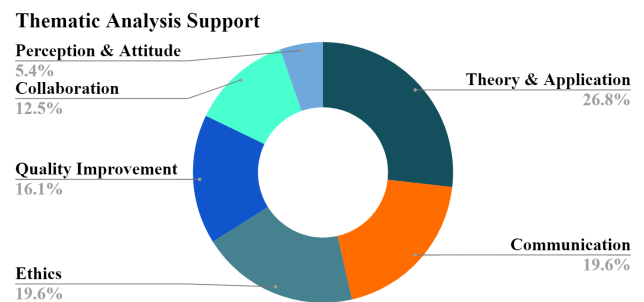

Fig. 1 Pie chart depicting the number of studies that support each of the six themes.

IV. CONCLUSION

Overall, the six identified themes could serve as a useful framework in building a comprehensive AI curriculum for UGME. Future work on the implementation and integration of the themes into UGME curricula is required.

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