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Creating a family health history interview protocol for use with undergraduate health professional students: A scoping review

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ABSTRACT

Background: Family health history can be used as a health promotion tool to assess health risk, improve data collection and disease prevention, initiate interventions, and motivate behavioral change, but its utility as a public health tool has not been fully explored. Collecting information for a family health history can be a challenging task. However, it is an important skill for undergraduate students to learn, particularly those in pre-health majors. Our aim was to create a family interview protocol for students' successful family health history collection using findings from students' research papers and a scoping review.
Study design: We summarized and listed suggestions from students' papers. Our scoping review followed Arksey and O'Malley's (2005) review process and the PRISMA Extension for Scoping Review checklist (2018).
Methods: We used Medline, CINAHL (EBSCO), ERIC (ProQuest), Web of Science, and Academic Search Premiere databases and Google. Using Covidence, we included peer-reviewed, English, journal articles and grey literature, narrowing our key term combinations to terms like family health history, interview or protocol, and undergraduate or health professional student.
Results: Protocol suggestions included having appropriate settings and preparation to conduct interviews with questions on socio-demographics, cultural and family relationship dynamics, health behaviors, and acute and chronic condition questions for family members. Students' papers addressed preparation for conducting interviews and obtaining better data from existing family trees and extended relatives to maximize learning about risk assessment. The scoping review revealed two themes associated with family health history, including creating genograms and interview methods used with history taking.
Conclusions: Implementing the protocol for future assignments will provide students with a training opportunity to identify their own disease risks, improve their family health history knowledge, and collect family health history data relevant to prevention and interventions focused on understanding chronic conditions and their management.

1. Background

Family health history (FHH) can be used as a health promotion tool to assess health risk, improve data collection and disease prevention, initiate interventions, and motivate behavioral change, but its utility as a public health tool has not been fully explored [1–4]. FHH is a risk factor for many chronic health conditions (CC), reflecting shared genetic susceptibility, environments, and common behaviors [4,5]. Moreover, an accurate knowledge of one's FHH may reduce disease risk by improving risk perceptions and positive health behaviors [2,3]. However, for health professional students to fully utilize FHH as a risk factor for future patients, they need to have an appropriate protocol to ask their own families questions about their disease histories and health behaviors.

We created a problem-based FHH assignment for our undergraduate public health and nursing courses to actively engage our students and ourselves, while encouraging critical thinking about health disparities, culture, and cultural competency in patient, provider, and healthcare

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team interactions. Aligning with the Council on Education for Public Health (CEPH)'s curriculum domain and concept requirements for bachelor's degrees, we addressed "the socioeconomic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities," along with communication and experiential learning in creating our FHH protocol for students' training [6].

Our students used the Surgeon General's electronic FHH tool, entitled "My Family Health Portrait," [7] to assess their FHH. This tool is an internet-based, electronic health record to share with family members or healthcare providers, with privacy protection. It helps doctors predict the diseases, disorders, and disabilities patients are most at risk for, provide more informed and personalized patient care, and take preventive action. This FHH tool is cost effective, easily accessible, and cross-culturally applicable [8–10].

Our FHH assignment was used as problem-based learning (PBL) to empower students in documenting their FHH and subsequently assessing their own health risks [11–13]. PBL is experiential or active learning [14]. It provides a way to get students personally involved in research by applying and reflecting on course concepts to assess how their FHHs influence their individual health; develops their research skills through participatory methods (e.g., interviewing and small group presentations); and facilitates peer learning and in-class discussion [15–17].

We previously examined beliefs regarding FHH knowledge [18] and behavioral change among undergraduate health professional students [12,13] and found that students needed help conducting their FHH family interviews, given this topic's sensitivity. Some discussions about past and current family illnesses and recent deaths were difficult, and students did not get the information they expected. We then spent considerable class and one-on-one student time suggesting interview questions and structure to best focus the interviews and collect information. We needed to clarify our assignment to alleviate the awkwardness of students not knowing how to ask about sensitive topics and receiving incomplete data, which would also improve their understanding of FHH.

Prior research on FHH confirmed students' difficulties collecting FHH data from family members. Survey research by Smith et al. (2015) on college students' motivations, barriers, and behaviors related to obtaining and discussing their FHH found the number one perceived barrier to obtaining a FHH was, "Don't know what questions to ask to obtain my history" (29.4 %) [19]. They found the third top perceived barrier was, "Don't know how to obtain my history" (23.0 %). Additionally, Sleeter's (2015) research on multicultural education and critical family history found it difficult for teachers-in-training to push beyond traditional family narratives or the basic stories they heard growing up about their ancestors [20]. She suggested that FHH could be deepened by situating the lives of students' ancestors within larger contexts of culture, social structure, relations of power and oppression, and historical events. Sleeter's broader contextual factors may be particularly helpful for minoritized and/or immigrant families [21], where historical policies and sociocultural practices in minoritized and immigrants' current and former countries can have a cumulative advantage or disadvantage impacting their life course and family health [22].

The theory of uncertainty management suggests that uncertainty within a medical encounter could be due to a lack of or too much information and/or multiple interpretations of information, providing stimulus for a patient's health information (HI) seeking and using one's judgment to reduce uncertainty [23,24]. We define HI seeking as patients obtaining information about personal health concerns from sources other than their doctors [25]. To improve one's medical encounters, a patient tries to cope with uncertainty via active HI seeking and use by participating in medical decisions, expressing concerns and feelings, and gaining agency by increasing understanding of disease etiology, treatment options, self-management knowledge, and sense of control [23,26]. Parallel to the theory of uncertainty management, there is uncertainty from health professional students in training about what to ask when they interview family members for HI related to their FHH. The theory suggests that providing health professional students with clear questions about what FHH information to collect will reduce their uncertainty and increase their agency as patients, students, and future healthcare professionals.

A precedent exists in nursing [27], with a pedagogical protocol as a best practice for teaching and learning related to collecting patient HI but not on FHH for students' training. Thus, besides our students' paper analyses for protocol suggestions, we conducted a scoping review to identify and synthesize student-focused literature on FHH and other healthcare research from providers, patients, and community members discussing how to collect FHH data. Our research question asks what is known from the literature on obtaining family health histories that can contribute to developing a FHH interview protocol for undergraduate, health professional students?

2. Methods

Our scoping review followed Arksey and O'Malley's (2005) review process and the PRISMA Extension for Scoping Reviews checklist [28–30]. Our research team consisted of four members to conduct database searches, enhance data collection reliability, and conduct content analysis. We reviewed public health, nursing, and other biomedical literature using Medline, CINAHL (EBSCO), ERIC (ProQuest), Web of Science, and Academic Search Premiere databases from January 1970 to March 2020. Eligibility criteria included: peer-reviewed, English, and quantitative, qualitative, mixed methods, or review journal articles. Exclusion criteria included articles not focused on family health history outcomes, outside of education, healthcare, or community settings, and opinion editorial or non-research. We used four exact searches for each database: 1) (family health history OR family health OR family history) AND (protocol OR interview); 2) (family health history OR family health OR family history) AND (students OR undergraduate OR training OR education OR health professional); 3) (family health history OR family health OR family history) AND (intervention OR prevention); and 4) (family health history OR family health OR family history) AND (health behaviors OR health care OR screening behaviors OR doctor's visit OR primary care). We also searched for supplemental grey literature using Google, with the same search terms and timeframe. This search resulted in finding nine resources but using six, peer-reviewed and non-peer-reviewed references (e.g., journal articles, informational brochures, and website information).

We imported 5168 abstracts from our database searches for a three-stage screening process in Covidence, i.e., software to assist with scoping and systematic reviews. After references were imported to Covidence, duplicates were removed, leaving 4643 abstracts for screening. For each abstract review stage, including screening, full-text journal article reviews, and data extraction, two reviewer votes from our four-person co-author team were initially required. Each team member completed title and abstract screenings in Covidence. If both reviewers agreed on the abstract's fit for our research, the abstract moved to the next level, full-text review. When reviewers did not agree, a third team member assessed the abstract to move it to full-text review or elimination. A similar process was used for each full-text review, where journal articles were either moved to the next level extraction or elimination. Articles remaining at the extraction stage were included in our scoping review and summary table. We included 119 abstracts for full-text review and advanced 17 articles for data extraction and inclusion in our summary table (Table 1). In a second literature search to update references from March 2020 to May 2022, using the same search terms, we imported 3393 abstracts to Covidence. Covidence removed duplicates, leaving 1781 abstracts for screening. We included 25 abstracts for full-text review and advanced 7 articles for data extraction and inclusion in our summary table. Combined, we imported a total of 8561 abstracts for screening from our two Covidence searches and 9 resources from our

Table 1
Family health history protocol, characteristics of included studies.

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
1	Ahmed, 2002	What are the errors and deficiencies of history taking?	45 third year medical students	Quantitative	This observational study used descriptive analysis that rated techniques and contents of students' history taking.	Students were found to be deficient in intitiation of the interview, asking open ended questions, using jargon, clarifying information, and staying on time.	The author recommended students summarize history with patient and be curious about discrepencies and social aspects of illness, and explore non verbal communications.	Interview Methods Used with History Taking	Sudan	Medical
2	Alexander, Waxman, & White, 2006	How can movies help students assess the psychosocial-spiritual aspects of chronic illness?	Third year medical students. Authors did not disclose number of participants.	Quantitative	Students underwent "cinemaeducation," which utilized movies to educate students on disease diagnoses. The mnemonic tool SCREEEM was used to collect and organize contextual information from the film: S-social interaction C- cutural connections R- religious/ spiritual E-economic stability E– education E-environmental satisfaction M-medical resources	No results presented; however, students completed a class presentation with their assessment and treatment options.	Activity used films as examples for medical students to examine broader psychosocial aspects of health care in patient assessment and treatment.	Creating Genogram Interview Methods Used with History Taking	United States	Medical
3	Block & Coulehan, 1987	To teach students to overcome barriers to communicate for medical interviewing.	130 s year medical students	Qualitative	Students practiced and discussed common difficult interview scenarios such as language barriers, rambling, drug use, sexual behaviors, patient personality and interviewers' feelings.	Students reported being more aware of their emotional response during difficult interviews, and they found the simulated interviews were similar to real patients.	Students found the immediate feedback about the interview beneficial because they gained experience with difficult interviews in a supportive environment.	Interview Methods Used with History Taking	United States	Medical
4	Centers for Disease Control and Prevention, 2023	How do you gather family health histories?	N/A	N/A, Pamphlet	N/A	N/A	This pamplet describes steps for the general public about collecting family health history, such as: asking questions at large family gatherings, preparing questions in advance related to diseases, medications, disability, pregnancies, deaths, and the timing of these issues.	Interview Methods Used with History Taking	United States	Medical/ Public Health
5	Daelemans, Vandevoorde, Vansintejan, Borgermans, & Devroey, 2013	How do family physicians collect and use family health history data?	16 semi-structured family interview	Qualitative	The authors searched for repeated themes of how family physicians use family health histories of patients and compared those themes with the literature.	Only 50 % of participants checked for family health histories, and most physicians did not use structured questionnaire.	Authors recommend physicians, or students in training, regularly inquire about family health history since patients may not always remember when asked.	Interview Methods Used with History Taking	Belgium	Medical
6	Dobbie, Medrano, Tysinger, & Olney, 2003	How can the BELIEF model help students provide culturally relevant care to patients?	200 first year medical students	Qualitative	Students took a course on BELIEF instrument used for culturally relevant interview: B- Health beliefs E– Explanation L- Learn patient	93 % of students elicited information from 5 out of 6 items in the BELIEF model and the authors recommend further	Article uses the BELIEF Instrument, a cultural interviewing tool that it can be used by students in	Interview Methods Used with History Taking	United States	Medical

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Table 1 (*continued*)

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
					opinion I- Impact E-Empathy F-Feel about it Students practiced in didactic session, standardized interviews, and clinical sessions with physicians. Student were then evaluated on their performance interviewing a Hispanic female patient.	research at other institutions with students from diverse cultures for generalizability.	training with patients or family members.			
7	Genetic Alliance, 2006a	Pamphlet on how to collect and use family health history	N/A	N/A, Pamphlet	N/A	N/A	Provides patients information on how to prepare for interviewing family members, such as asking open-ended and clarifying questions and what to do with the information.	Interview Methods Used with History Taking	United States	Medical
8	Genetic Alliance, 2006b	Pamphlet on genetics and which serious diseases run in the family	N/A	N/A, Pamphlet	N/A	N/A	The pamphlet suggests collecting family health histories at family events, using audio or video recordings about racial/ ethnic origins, culture, births and deaths, with places and dates, and diseases or conditions.	Interview Methods Used with History Taking	United States	Medical
9	de la Haye, Whitted, & Koehly, 2021	What are low income African Americans beliefs around the FAMILIES share tool?	51 low income African Americans	Mixed Methods	Evaluated the Families Share tool and Sharing Health Assessment and Risk Evaluation. Participants used the Families Share workbook for 6 weeks after baseline assessment. Baseline assessment gathered demographic information, family health histories, and health status on height and weight. Follow-up survey collected data about acceptability and use of the workbook.	Data indicated that families approved and used the tool. Participants who used the tool improved communication, but it did not improve knowledge of disease risk or change health behaviors.	Families SHARE suggests collecting information on comorbidities and deaths, information on behavioral strategies to reduce disease risk, and examining social networks and coping strategies to improve family health history data collection.	Interview Methods Used with History Taking	United States	Medical
10	Imes, Lewis, Austin, & Dougherty, 2015	How do college students respond to interventions to lower family history of cardiovascular diseases and coronary health disease?	15 college students	Mixed Methods	This study is mixed methods that used questionnaires, blood work, and interviews. The authors conducted two in person sessions with three generations of family health histories that provided messages about CVD.	Results report intervention is feasible and acceptable to college students with family history of cardiovascular diseases.	Intervention showed that students searched for foods to avoid and which exercises improve cardiovascular health.	Genogram	United States	Nursing
11	Johnson & Bennett, 1995	What are the rates of family history of	1201 community members	Mixed Methods	This longitudinal study collected data from family	Over time the rates of alcoholism increased. For instance at time period 4,	Adolescents may not be aware of family history of alcoholism, so verification	Interview Methods Used with	United States	Medical

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Table 1 (*continued*)

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
		alcoholism among a community sample?			members of alcoholic patients on 4 occasions over 13 years.	80 % of participants were positive for alcoholism	of self reports are recommended.	History Taking		
12	Kwong, Bodurtha, & Busch, 2020	What is the family health history-taking literature in pediatric outpatient settings?	8 articles were included in final analysis	Systematic Review	The systematic review was conducted using PRISMA guidelines.	Study found inconsistent collection techniques across studies, families had limited knowledge of history. Authors discern no validated family health history tool for children.	Reviewers propose a multimodal approach to data collection, one that is tailored to the health issues relevant to child's life stage, and one that targets disorders relevant to child's health symptoms.	Interview Methods Used with History Taking	United States	Nursing
13	Lim, 2008	How do graduate students perceive the personal and professional usefulness of taking their own family health history, creating a genogram, and presenting it to the class?	8 students enrolled in a master's counseling program	Mixed Methods	Students interviewed at least two of their family members to gather family health history and then created and presented their own genograms to the class. Students participated in an interview with the instructor and brief questionnaire on the experience. Descriptive statistics were calculated for both measures.	Despite emotional difficulty of collecting family health histories and presentation, students recommended it for future students. Students also reported personal and professional growth as a result of completing the exercise.	Having the instructor present their own genogram to the class before assigning the task to students can be helpful and foster trust. Students learning was greatly enhanced by listening to their peers genogram presentations.	Interview Methods Used with History Taking Creating Genogram	United States	Counseling
14	Martin, 2003	To describe the creation and development of a history taking framework with a patient-centered approach designed for use by medical students and doctors.	N/A	Description of Martin's map.	Not given, author reports it has been used successfully for 10 years to teach interviewing Authors used "Martin's Map," which is a conceptual framework used to link medical knowledge to practice.	Participants learned to take a focused medical and social history using a patient-centered approach.	Don't ask redundant questions, don't treat questions as "to-do" list, recognize and explore patient clues as they present, and constantly scan and listen for how a patient is coping and what strengths/resources they have available.	Interview Methods Used with History Taking	United States	Medical
15	Nguyen-Truong, Davis, Vuong, Nguyen, Truong, & Leung, 2021	What are the perceptions and opinions of Asian and Micronesian Islander individuals on family health history, genetic cancer screening, and family health history outreach materials?	20 participants	Qualitative	Thematic analysis of semi-structured, open-ended participant interviews regarding participants' views on FHH, cancer screening, and a postcard encouraging individuals to get screened.	Themes uncovered revolved around differing levels of knowledge of family health history and cancer screening, the importance of culturally informed language and outreach materials, and issues regarding communication amongst family members and health care providers.	Be aware that language, cultural, geographical, financial, and health literacy barriers may exist that impede gathering of family health histories, such as different definitions of family or viewing certain diseases as shameful. Messaging related to health screenings and FHH must be clear and personal relevance needs to be stated in detail.	Interview Methods Used with History Taking.	United States	Medical/ Public Health
16	Rogers & Durkin, 1984	How do semi-structured genogram interviews compare to informal/unstructured patient interviews?	19 patients were interviewed	Mixed Methods	New patients to an outpatient primary care practice were interviewed by a physician informally and then interviewed by the physician in a semi-structured manner to	On average semi structured interviews collected 4x the amount of family health histories than the unstructured interviews. Semi	Asking about the family health histories of specific diseases, such as smoking, drug abuse, etc. This helps patients' memory and may bring up relevant	Interview Methods Used with History Taking	United States	Medical

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Table 1 (*continued*)

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
					create a genogram. The amount and quality of information elicited, the patients' perspectives, and time taken to conduct the unstructured versus genogram interviews were compared.	structured interviews produced 32 percent referral need for counseling services compared to none for unstructured interviews. The majority of participants believed the genogram method is important for clinician-patient communication.	information that patients might not have initially thought was useful. Having patients construct their family trees when filling out a genogram may help them to remember their family health histories more readily.	Creating Genogram		
17	Rolf, Schneider, Amendola, Davis, Mittendorf, Schmidt, Jarvik, Wilfond, Goddard, & Hunter, 2022	What are the barriers to accessing cancer family health histories for individuals who identify with the LGBTQ + community?	668 non-LGBTQ + participants and 133 LQBTQ + participants took part in the surveys, while 20 LGBTQ + participants also underwent interviews.	Mixed Methods	Participants completed surveys measuring relationships and family health history communication with family members, such as sharing information related to cancer risk and genetic test results. Semi-structured interviews were also conducted.	The survey found that LGBTQ + individuals generally reported significantly worse family functioning. The interviews revealed that 30 % of the LGBTQ + individuals felt their sexual identity negatively impacted the occurrence of health-related discussions amongst their families, and 10 % felt their sexual orientation limited their access to their family health histories.	Health care providers and instructors must be aware of patients' identities. Patients identifying as LGBTQ + may have limited access to their family health histories because of strained family relationships.	Interview Methods Used with History Taking	United States	Medical
18	Shellenberger, Dent, Davis-Smith, Seale, Weintraut, & Wright, 2007	What are the benefits of cultural genograms, and how can they be taught to a wide spectrum of health care providers at all levels?	N/A	N/A	Article served to describe what a cultural genogram is, the benefits, and how it can be widely implemented.	The article cited different findings, including courses for both medical students and residents, that support that cultural genograms can help future and current health care providers be more culturally competent.	Providers (and students) taking family health histories must be respectful, unbiased, and attentive. Cultural competence leads to additional context that will improve the patient's care. Cultural genograms may extend time to completion.	Creating Genogram	United States	Medical
19	Smith, Marshall-Dorsey, Osborn, Shebroe, Lyles, Stoffelmayr, Van Egeren, Mettler, Maduschke, Stanley, Gardiner, 2000	To describe a method on how to teach current and future health care providers to take a patient-centered interview.	N/A	N/A	Article served to describe a patient-centered interviewing method that was previously demonstrated to be successful for improving physician and patient interactions. The goals for the residents were to develop both interview skills and a willing attitude to implement the method.	N/A	When teaching an interview method, focus on attitudes to skills learned. Instruct providers/student to use interviewee's name when conducting interviews. Provide a detailed and specific outline of how an interview should be conducted, encourage self-awareness amongst interviewers	Interview Methods Used with History Taking	United States	Medical
20	Taber, Ghani, Schiffman, Kohlmann, Hess, Chidambaram,	How do primary care providers currently take family health histories?	40 providers completed the questionnaires. 12 providers completed	Mixed Methods	Primary care providers completed questionnaires and participated in semi-structured interviews. They	Providers varied greatly in collection method and in when they reviewed family health histories with	The relevance of family health histories for patient care needs to be explained to patients/interviewees	Interview Methods Used with	United States	Medical

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Table 1 (*continued*)

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
	Kawamoto, Waller, Borbolla, Fiol, & Weir, 2020		semi-structured interviews.		focused on determining how providers illicited family health histories from patients and how family health histories could inform patient care.	patients. Family history of cancer was found to be well-documented. The lack of uniformity indicated the need for more standardization and better integration of family health history software.	but also to providers/ interviewers. Encouraging and engaging the patient in family health history collection may improve data collection accuracy and shorten collection time in clinics. Development of a patient-centered tool that is efficient, easy to use, and quick is needed. It may be useful for people with high risk for hereditary diseases.	History Taking		
21	Talwar, Zhao, Goodson, & Chen, 2020	What is the impact of an online genomics course focused on family health histories for undergraduate health education students?	69 undergraduate students	Mixed Methods	Students completed surveys before and after taking the genomics course.	The training was viewed overwhelmingly positive by students. They reported a desire to learn more about family health histories and implement these histories in their future careers. Students' knowledge about family health histories significantly improved after the course compared to pre-course measures.	Undergraduate students may benefit from more interactive activities and speakers when learning about family health histories.	Interview Methods Used with History Taking	United States	Public health
22	Tavernier, 2009	How does having nursing students collect their own family health histories and create a genogram enhance their knowledge of genetic risk factors involved in reproductive health?	107 nursing students	Qualitative	Students were assigned a project in which they interviewed their families and created at least a three generation genogram after in-class education on genetics. Students also had to identify at least one health condition within their family health histories and describe interventions using evidence-based research. Students then completed surveys on various aspects of the assignment.	The majority of students believed the assignment was a positive and relevant learning experience that offered unique knowledge and skills. The assignment allowed students to identify their own risk factors and hertiable conditions, while also learning about appropriate interventions. Students also believed the assignment increased bonding within their families.	An alternative assignment was proposed for students unable to collect their own family health histories. They had to research a hertiable condition and describe appropriate interventions. Students should be prepared to encounter unfamiliar health terminology or commonly held false health beliefs when gathering information from their families and should attempt to uncover the correct term/condition or consult their instructor. Students and family members may experience anxiety about sharing such personal information, so instructors must ensure confidentiality and trust.	Interview Methods Used with History Taking Creating Genogram	United States	Nursing

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Table 1 (*continued*)

	Author(s) and year of publication	Primary research questions or aims	Study sample	Study design	Analytical technique	Outcome measures (RESULTS)	Key points to add to the Protocol	Themes	Country of Origin	Discipline
23	Yoon, Goh, Fung, Tang, Matchar, Ginsburg, Orlando, Ngeow, & Wu, 2021	How do multi-ethnic Asian individuals being treated for breast cancer view health risk based on knowledge of one's family health history, and what is their opinion on using a family health history tool?	20 multi-ethnic Asian participants	Qualitative	Individuals being treated for breast cancer who agreed to participate in the study filled out their family health histories using a collection tool and completed a risk assessment based on their health and family health history. Participants then had the option to discuss their family health histories and the risk assessment results with their providers. Participants then completed semi-structured interviews regarding the experience.	Participants viewed the assessment tool positively, as it helped them learn more about their genetic risk. Participants believed there were cultural barriers to family health history collection. Some participants felt discussing their family health histories would be upsetting, along with concerns about fear and discrimination based on their genetics. Some participants needed clearer instructions and reminders about the family health history protocol and to ask family members for their family health histories.	It is important to be aware that for some individuals and cultures, discussing health and disease risk can be frightening and avoided.	Creating Genogram	Singapore	Public health
24	Young, 2005	To instruct nurses and other health providers on how to take a patient's sexual health history.	N/A, handout	N/A	N/A	Provided suggestions for nagivating sensitive topics and questions during patient interviews.	Suggestions include role-playing or observing another provider conducting interviews. Provide a safe and comfortable environment and assure confidentiality. Begin with a structured interview for general information and then move to more sensitive topics. Be able to explain why these questions are important.	Interview Methods Used with History Taking	United Kingdom	Nursing

Google search, leading to 144 articles/resources for eligibility, and advanced 24 articles/resources for our scoping review and summary table inclusion.

Covidence produced a flow chart for both searches, showing the three-stage review process for charted data, with one team member combining the flow charts and adding grey literature resources from our Google search. Our data charting involved extracting information from included articles and summary spreadsheet entries. We summarized article characteristics (e.g., publication year, type of methods, discipline, and country of origin) and key themes and questions (e.g., interview procedures, questions asked, population targeted, surveys, instruments, or frameworks used, and impact on students' or others' training or knowledge) that would contribute to students' understanding of how to conduct a FHH interview, based on our prior FHH research paper experiences. From these summaries, we used qualitative content analysis to identify repeated themes for inclusion. Our PRISMA Fig. 1 shows each review stage with exclusions.

3. Results

3.1. Numerical analysis

Our combined searches yielded a total of 24 journal articles, informational brochures, and website information published between 1984 and 2022. Most references (17/24) were published after the United States (U.S.) Surgeon General, Dr. Richard Carmona, designated Thanksgiving as National Family History Day in 2004, suggesting an increased research interest in FHH after this event. We included references from multiple disciplines, e.g., medicine, public health, nursing, and counseling, where most (17/24) were from medicine. Geographically, most articles were from the U.S. (19/24), with others from Belgium, Singapore, Sudan, and the United Kingdom. There were 11 qualitative, 3 quantitative, and 5 mixed methods studies. The remaining 5 references were reviews or public information, without data collection.

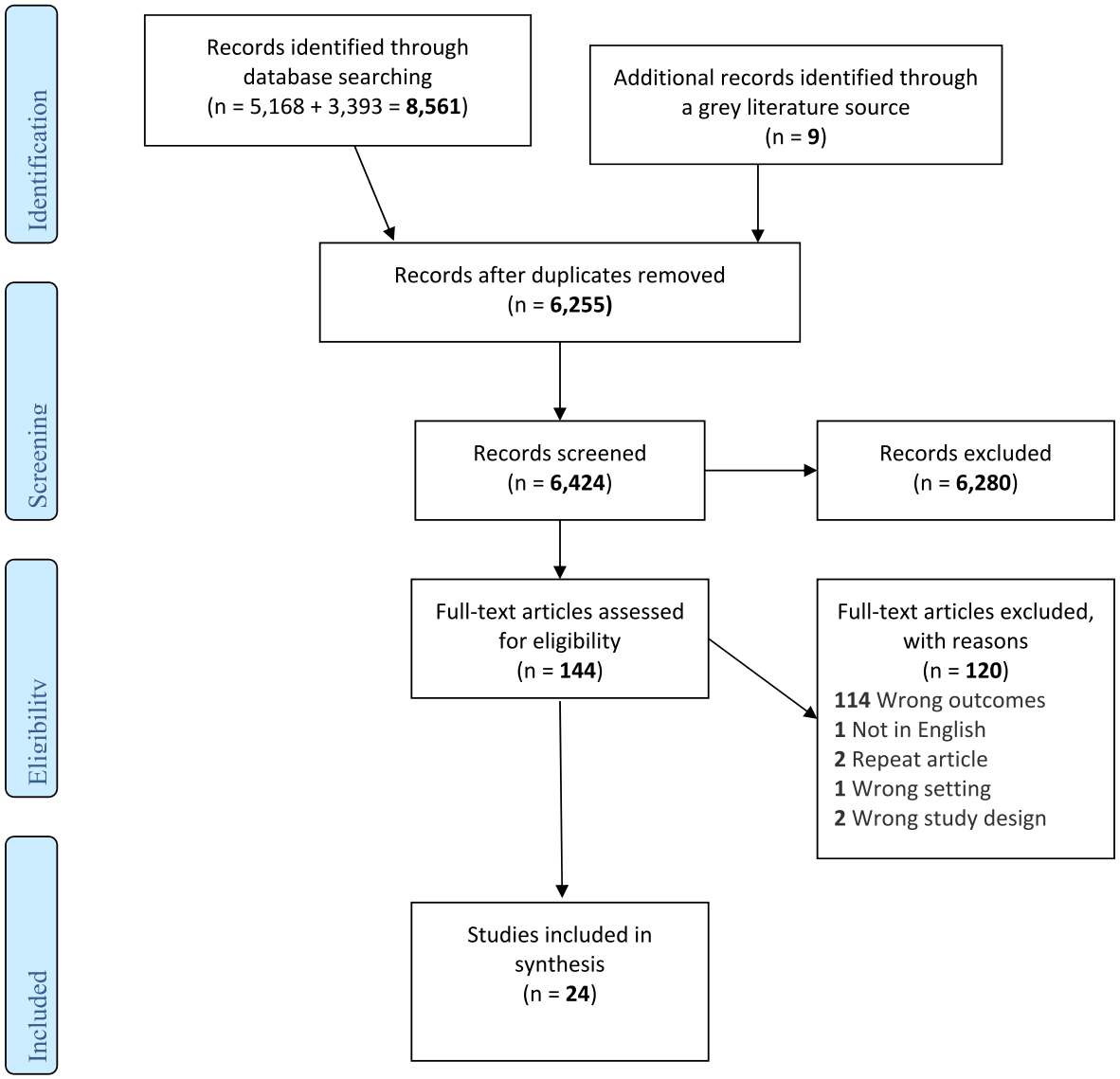

Fig. 1. Scoping review on developing a family health history protocol, PRISMA flow diagram. Source: PRISMA flowchart, Covidence.

3.2. Overview of content themes

We organized our data into two content themes–creating genograms and interview methods used with family history taking, such as developing rapport and having a person-centered approach (Table 1). The *creating genograms* theme emerged from 6/24 articles discussing interview questions for physicians and counselors to use with patients and student training with family and patient interviews. Rogers and Durkin (1984) used structured questions during physician visits with genogram interviews, rather than informal conversations with patients, allowing for more comprehensive patient data collection on CC, social and behavioral concerns, and counseling referral needs [31].

The remaining articles discussing genograms addressed medical, graduate, and undergraduate students. Alexander, Waxman and White (2006) used the film "What's Eating Gilbert Grape?" as a case study of family backgrounds and social support networks to develop genograms, teaching medical students how to assess and treat CC within a family context [32]. The authors used a SCREEEM mnemonic to gather contextual patient information, including social interactions, cultural connections, religion or spiritual beliefs, economic stability, educational preparation, environmental satisfaction, and medical resources. Their findings demonstrate the importance of assessing interdependent relationships between physical health, mental illness, and family functioning in primary care. The article by Shellenberger et al. (2007) used interview questions for medical and undergraduate students to gather information for a cultural genogram, beyond asking traditional biological questions [33]. They probed ethnic and cultural variables, identified health beliefs and behaviors, and described health maintenance and disease prevention practices. Findings from this article supported expanding traditional FHH questions to include cultural and family dynamics that affect healthcare, patient-provider communication, and patient misunderstanding. Imes et al. (2015) focused on an intervention to understand perceived cardiovascular and coronary heart disease risk in young adults with these family histories [34]. Students' patient reviews reflected how their FHH or pedigree chart might impact health, such as what is needed to make health behavior changes or seek healthcare. These articles referenced physiological and social determinants of health information in creating genograms.

Outside of the medical sciences, Lim (2008) targeted graduate students in counseling, conducting phenomenological genogram interviews and surveys, rating their genogram data collection experiences [35]. Students' genogram assignments resulted in self-reports of transformative learning, changing their perspectives on how they viewed themselves in the world. Tavernier (2009) used ethnographic design to increase nursing students' understanding of genetic and reproductive health through their family histories [36]. Students were able to apply reproductive health theoretical concepts to themselves and use these skills in future practice. They used genograms to gather FHH and become healthcare advocates. This research on genogram construction benefited interprofessional students' sense of self, family belonging, and their professional development. However, as gathering FHH work is emotionally difficult, lessons learned from these authors include providing students counseling therapy information and reflecting on their FHH and behaviors to improve population health.

The *interview methods* theme, discussed in 18/24 articles, focused on improving medical and other health professional students' FHH taking, physicians and other health professionals obtaining patient data, and/or lay people or community members collecting their own FHH data. Block and Coulehan (1987) taught medical students to overcome communication barriers during patient interviews by using simulations with case histories and refocusing techniques for unanswered questions [37]. Students were taught that interviewing difficulties may result from the patient, the interviewer, or both. Smith et al. (2000) addressed patient-centered interview techniques for medical residents, focusing on attitudes and skill development [38]. Their methods included five interviewing strategies: 1) "Setting the stage for the interview" or preparing patients for the interview; 2) "Chief complaint/agenda setting" or setting the agenda and tone for the interview; 3) "Non--focused interviewing" or structured interviews and non-verbal ques; 4) "Focused interviewing" or open-ended inquiry; and 5) "Transition to the doctor-centered process" or summarizing information and asking patient for questions. Ahmed (2002) focused on developing medical students' interviewing skills for FHH taking [39]. Students learned that lengthy interview questions and excessive note-taking impacted communication and interview information. Dobbie et al. (2003) developed the BELIEF instrument to teach cultural interviewing skills to pre-clinical medical students, to learn about patients' health beliefs [40]. They encouraged a collaborative approach with patients, incorporating empathy and feelings. These articles address the importance of making students aware of multiple reasons why a FHH interview can be difficult but not placing blame on patients while also searching for solutions.

Rogers and Durkin (1984) included social determinants of health questions for student interviews, such as a family member's place of residence, occupation or military service, cohabitation or marital status, religion and ethnic background, CC, health behaviors, and physical or mental illness impacting daily activities [31]. Similarly, Martin (2003) provided a framework for patient-centered history taking using an interview map or visual aid for teaching medical students [41]. The interview map increased students' confidence in their abilities to synthesize medical and social history and modify questions based on patients' responses. Talwar et al. (2020) assessed the impacts of an online genomics course for undergraduate health education students [42]. Students improved their knowledge, attitudes, intention, and confidence scores on adopting FHH-based genomics skills into future practice through videos and other resources. But, they wanted more interactive activities and speakers incorporated into the curriculum. These articles address the importance of patient-centered histories, asking medical, social, behavioral, and cultural questions.

Johnson and Bennett (1995) addressed a family history of alcoholism in parents, grandparents, and siblings over four time points in 13 years [43]. They used a combination of personal interviews, medical health forms, and the Family History Research Diagnostic Criteria to obtain FHH. This study suggested multiple time points for FHH interviews could provide insight into health behavior change. Young (2005) offered a structured approach to sexual health history and risk assessment for nurses, midwives, and other community health professionals [44]. Key themes for student interviewers included being purposeful, sensitive, self-aware, and in-tune with the patient or family member in collecting FHH. Daelemans et al. (2013) focused on understanding how Belgian family physicians assess FHH [45]. They found that most physicians did not use a standard tool; however, for consistent interviewing, their research emphasized healthcare providers and health professional students use a FHH guide. Kwong et al. (2020) reviewed pediatric primary care providers, indicating that providers varied in how they collected FHH and their methods [46]. These reviews support the need for broader patient-focused, standardized FHH tools.

Taber et al. (2020) used a qualitative approach to determine how healthcare providers collected FHH, supporting the need for more consistency with collecting and documenting FHH [47]. Rolf et al. (2021) used a mixed-methods approach to identify perceptions of physicians who conveyed test results to family members and identified potential knowledge barriers among Cancer Health Assessment Research Many (CHARM) study participants self-identifying as lesbian, gay, bisexual, transgender, queer, and other sexual orientations and gender identities [48]. This study recognized the impact family relationships or strained relationships may have on gathering FHH and accessing genetic counseling and testing. They suggested tailoring resources for patients and families, facilitating open communication, and using patient materials with inclusive language. Yoon et al. (2021) examined the perceived value of FHH-based knowledge risk among Asian patients with breast cancer, using a patient-facing FHH tool [49]. Patients' acceptance and

Table 2
Detailed summary of suggestions for a protocol to conduct family health history interviews.

Articles	Notes
Daelemans, S., Vandevoorde, J., Vansintejan, J., Borgermans, L., & Devroey, D. (2013). "The Use of Family History in Primary Health care: A Qualitative Study". *Advanced Preventive Medicine*. https://doi.org/10.1155/2013/695763	• Are there certain diseases running in the family? • Inquire about family histories of first- (parents and siblings), second- (grandparents, aunts/uncles, cousins), and third-degree (great grandparents) relatives. • Consider risk assessment of relatives- high, medium, and low risk for diseases or conditions
Centers for Disease Control and Prevention (2023). "Knowing is Not Enough-Act on Your Family Health History." Office of the Associate Director for Science (OADS), Genomics & Precision Health. https://www.cdc.gov/genomics/famhistory/knowing_not_enough.htm Last accessed: 8/7/2023	• Make a list of relatives you need to include in your family health history • Write out your questions ahead of time because it will help you to focus your discussion • Prepare your questions • Among the questions to ask are: -Do you have any chronic illnesses, such as heart disease, high blood pressure, or diabetes? -Have you had any other serious illnesses, such as cancer or stroke? -How old were you when you developed these illnesses? -Have you or your partner had any difficulties with pregnancies, such as miscarriages? -What medications are you currently taking? • Also ask questions about other relatives, both living and deceased, such as: -What is our family's ancestry - what country did we come from? -Has anyone in the family had learning or developmental disabilities? -What illnesses did our late grandparents have? How old were they when they died? -What caused their deaths? • Find a good time to talk in a relaxed setting: -A good time may be at reunions, cookouts or holidays, such as Thanksgiving. If it's not possible to talk to your relatives in person, you can also talk with them over the telephones, or send them questions by mail or e-mail • Explain to your relatives what you are doing. Begin your conversation by explaining that learning more about your family health history can help save lives. Let your relatives know that the information they share about their individual health histories will help you create a Family Health Portrait that will benefit the entire family. • Ask one question at a time. It will be easier for your relatives to provide you with useful information if you keep your questions short and to the point. If you need more details, ask follow-up questions such as "why," "how" or "when." Try to get as much specific information as possible.
Genetic Alliance [2006a]. *Does it Run in the Family? Vol.1: A Guide to Family Health History*. Washington, D.C.: Genetic Alliance. https://www.ncbi.nlm.nih.gov/books/NBK115504/. Last accessed: 8/7/2023	• When is a good time to start talking about family health history?..family events like birthday parties, weddings, reunions, religious gatherings, holiday dinners, and funerals • Pick the questions you will ask ahead of time. • Write down health-related information given by your relative. • Try to keep the questions short. Avoid questions that can be answered with a simple "yes" or "no." • Use follow-up questions such as "why," "how," and "can you give me an example." • Record the interviews via an audio recorder or cell phone or camera videos. • Ask for information from your parents, siblings, aunts/uncles, cousins, and grandparents. • First inquire about whether your family has family trees, charts, or listings of family members. This information may be written in baby books, photo albums, birthday date books, a family bible or other religious records. • What's their racial/ethnic background and family origins? • What are their dates of birth and places of birth? • If any relatives are deceased, what were their ages and causes of death? • If any relatives have any diseases or conditions, what were their ages at onset of these diseases or conditions? • Is there any other information about your ancestry or culture that are important to know? • Questions about childhood: Where were you born? Where did you grow up? Did you experience any health problems (for example, allergies) as a child? Do you have any brothers or sisters? Are they living? How old are they? • Questions about adulthood: What jobs have you had? Can you tell me about a normal day? What was your work environment like? Do you have children? What are their names? When were they born? Did they have any health problems? What habits (sun exposure, physical activity, smoking, etc.) have you had that could have affected your health? Did you have any health problems as an adult? At what age? How was this treated (e.g. medicine, surgery)? • Questions about parents and grandparents: When and where were your parents born? What do you know about them (for example, their jobs and hobbies)? When and where were your grandparents born? What do you remember about them? Did your parents or grandparents have any health problems? Do you know if your parents or grandparents took medicine on a regular basis? If so, for what? Did they use home remedies? What kinds and for what? • Questions about family life: Has your family lived anywhere that caused them health problems (e.g. disaster areas, waste sites)? What foods does your family usually eat? Describe a typical family breakfast or dinner. Do you eat special foods for special occasions? Has anyone had problems in pregnancy or childbirth? What kinds of problems? Are there any diseases that you think might run in our family? Is there anything else you would like to tell me about your life or health concerns in our family?

(*continued on next page*)

Table 2 (*continued*)

Articles	Notes
Genetic Alliance [2006b]. *Does it Run in the Family? Vol.2: A Guide to Genetics and Health*. Washington, D.C.: Genetic Alliance. https://www.ncbi.nlm.nih.gov/books/NBK115606/. Last accessed: 8/7/2023.	• How can knowing my family health history help me stay healthy?
Rogers, J., and Durkin, M. (1984). The semi-structured genogram interview. I: Protocol, II: Evaluation. *Family Systems Medicine, 2* [2], 176–187. https://doi.org/10.1037/h0091655	• Identify at least three generations of family members, including you, your parents, and grandparents. • Identify your spouse and children if this applies. • Obtain basic information for each family member, including: name, date of birth, date of death, place of residence, education, occupation, and marital status or cohabitation. • For each family member, identify if there are any chronic or recurring medical problems; functional limitations or unable to do daily activities due to a physical or mental illness; alcohol, cigarette (also any tobacco or e-cigarette use), or drug abuse; school or work problems; and major change in behavior within the last year? • Inquire about your family's role in caring for health problems. • Is there is a family caretaker? Who helps with your illnesses? • What has been your, and your family's, general experience with doctors or therapy?
Young, F. (2005). How to take a sexual history. *The Journal of Family Health Care, 15* [5], 149-51. https://www.ncbi.nlm.nih.gov/pubmed/16315683	• Provide a safe, comfortable environment for the interview. • Explain your confidentiality policy (or consent process). • It may be helpful to start with more general health questions, building rapport, and then move on to sensitive health questions that are more personal, such as sexually-transmitted infections. • Be well-prepared with the questions you will ask your interviewee. Have a clear and purposeful agenda. • A health professional needs to remember these points and ask him/herself these questions: -Be Purposeful. Why am I asking my interviewee these questions? -Be Sensitive. How can I ask intimate or personal questions without offending or distressing the interviewee? -Be Self-Aware. Do my body language and the words I use help the interviewee during this interview? -Be In tune with the Interviewee. How can I find out relevant information, which the interviewee may be reluctant to share with me? Can I negotiate with my interviewee for this information? How can I help relieve any of my interviewee's anxieties?

use of the tool were impacted by their perceptions of personal control with early detection, patient and family anxiety, genetic discrimination, adequate plans for follow-up care, and cultural beliefs related to disease and dying. These references speak to considerations of diversity, inclusion, and trust building in patient-provider communications.

Genetic Alliance (2006a; 2006b) addressed the importance of laypeople collecting FHH, through storytelling, photos, quotes from family members, and a healthcare provider card to encourage information sharing [50,51]. They focused on genetic screening for diseases that run in the family, to maintain health and/or seek treatment. Similarly, the CDC (2023) focused on laypeople collecting FHH, sharing it with healthcare providers and family members, and making health behavior changes with healthcare provider consultations [52]. de la Haye et al. (2021) evaluated an evidence-based FHH intervention, "Families SHARE," for African Americans living in low-income neighborhoods in Baltimore, Maryland and Washington, D.C [53]. Their community-based tool used personalized family trees, disease definitions and risk factors, and information on healthy lifestyle choices based on participants' disease risk levels. It increased participants' sense of ownership of FHH information and communication among family members, social connections, and healthcare providers. Nguyen-Troung et al. (2021) explored perceptions, beliefs, experiences, and recommendations from Asian (e.g., Chinese and Vietnamese) and Micronesian Islander (e.g., Chuukese and Marshallese) community leaders and members about FHH genetic cancer screening outreach as an academic-community partnership team in the U.S. Pacific Northwest [54]. Culturally relevant outreach, resources, and education on cancer prevention were identified as needs within these communities and amongst healthcare providers to address potential difficulties with patients' understanding, hesitancies, or lack of FHH information. The authors suggested using simple language, clearly conveying the importance of screening, acknowledging cultural differences in the definition of family, and promoting meaningful discussions as improvements in history taking for Asians and Micronesian Islanders. These sources demonstrate a need for standardized FHH tools but also adding cultural modifications to improve data collection strategies.

3.3. *Guidance for students conducting FHH interviews*

We present findings for creating a FHH interview protocol in Table 2, showing a summary of students' and literature review suggestions. It should be used as a brief guide for questions and points to consider when students conduct FHH interviews. We included these structural tips for students conducting FHH interviews.

- Create or search for an existing family tree.
- Find a safe and comfortable place and time to conduct the interview.
- Prepare questions ahead of time, prior to your interview.
- Explain the purpose of the interview and how knowing about your FHH can help family members stay healthy.
- Explain your confidentiality policy or consent process.
- Ask questions on nuclear or extended family and social, behavioral, and cultural aspects of health.
- Ask one question at a time and keep questions short.
- Use follow-up questions.
- Rate relationships with parents and siblings; and
- Consider future risk assessment of relatives for diseases or conditions.

Students focusing on these suggestions will likely collect higher quality data from their relatives.

4. Discussion

This project provided insights from our review of the literature and undergraduate health professional students' research papers to create a protocol for conducting FHH interviews. We found two content themes in the literature, creating genograms and interview methods used with family history taking, involving FHH interactions with students, patients, and community members. Students' research papers addressed advanced preparation for conducting interviews and obtaining better data from existing family trees and extended relatives to maximize learning about risk assessment. Protocol suggestions from various authors and students focused on appropriate settings and preparation to conduct interviews, collecting socio-demographic, cultural and family relationship dynamics, health behaviors, and acute and CC questions for

family members. Rogers and Durkin (1984) suggested that using genograms with patients can help provide more HI [31]. Moreover, the National Institutes of Health (2016) advocates for families to normalize talking about FHH during holidays, to consistently collect information [55].

We also found some limitations in the literature reviewed. Most of the reviewed literature focused on medical doctor to patient FHH conversations or medical doctor to medical student training, with little focus on undergraduate health professional students' training. Second, the literature was less focused on students' perspectives in practicing FHH data collection with classmates, patients, family, or friends or how they evaluated and learned from their classroom or community experiences. Finally, the literature reflected that healthcare providers often do not spend enough time discussing FHH with patients, and thus, their FHH taking is subpar. But, these limitations could be addressed through students' training and practice with family interviews.

Based on our prior use of a FHH research paper in repeated courses, students mentioned the assignment's benefits were having discussions about family diseases that lead to increased family cohesion and support for these problems and sharing this information with other family members. People often think bimodally about FHH, as they either realize they have a family history of a disease and perceive it as inevitable or do not take the disease seriously enough. These opposite reactions may be more problematic in certain cultural groups, where people don't talk about health within their families. Given the difficulties in asking family members questions about their FHH, one student suggested using genograms as a visual aid to spark family discussions. While using visual aids is consistent with our literature findings, there may also be a lack of cultural sensitivity in using genograms, where students and their families from some cultures may not discuss death, chronic diseases, or grief, contributing to uncomfortable or suppressed family conversations and inadequate data collection.

We considered lessons learned from the literature to improve healthcare professional students' FHH interview protocols. Lim (2008) suggested future FHH interview protocols should include a referral list of campus and community behavioral and physical health services, like mental health, drug, or alcohol counseling services for students, their families, or friends, in case interviewees are upset when discussing these problems [35]. Student training may be enhanced by using the protocol to conduct practice interviews with consent forms and peer assessments in class. Given the COVID-19 pandemic and problems with medical mistrust, a protocol should include explicit mention that tailoring healthcare to one's FHH can help alleviate medical mistrust. Additionally, a protocol should provide clear explanations for privacy and confidentiality, where students will not disclose interviewees' personal information unless they mention harming themselves or someone else.

Implementing the FHH interview protocol for future courses will provide students an opportunity to identify their disease risk; understand how they can change their behaviors to decrease this risk; and recognize the impact of family support on these behaviors. Students will hone their patient interview skills and connect health concepts learned in their classes to real-life situations, while building confidence and career development skills. Furthermore, student and population health education are needed to assess FHH, prominent CC, and how to prevent and/or treat them, as well as address these needs within familial, historical, and sociocultural contexts. Tackling disease prevention using FHH provides undergraduate students an opportunity to positively impact themselves, their families', and future patients' health outcomes.

5. Conclusion

We created a FHH interview protocol for students' successful data collection using insights from prior students' FHH research paper interviews and a scoping review. General protocol suggestions included students conducting FHH interviews in appropriate settings when preparing to do interviews, collecting contextual information on sociodemographics, cultural and social determinants of health, family relationship dynamics, health behaviors, and acute and CC questions for family members. Creating genograms and interview methods emerged as two FHH themes from the literature, while students mentioned preparation for conducting interviews and obtaining better data from existing family trees and additional relative interviews. Implementing the protocol for future assignments will provide students a training opportunity to identify their own disease risks, improve their FHH knowledge, and collect FHH data relevant to prevention and interventions, to understand the contexts, risks, and management of CC.

Data statement

This data is available on request.

Human rights

This research has been approved by the Colorado Multiple Institutional Review Board (COMIRB), related to the University of Colorado Denver, in which this research was performed. Participants gave informed consent to the work.

Ethical approval

Ethical approval for this article was granted from the Colorado Multiple Institutional Review Board for research involving human subjects (January 10, 2014, COMIRB 10-1407 amendment).

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