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Knowledge, attitudes, and beliefs of cardiovascular disease prevention in young adults in the country of Georgia

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Abstract

Introduction: Cardiovascular disease (CVD) accounts for 46% of all mortality in the country of Georgia (former Soviet Union). Young adults in that country have not been studied regarding CVD and a need exists to understand lifestyle modifications to promote cardiovascular health.

Design: An interpretive description qualitative design was used to explore Georgian young adults' knowledge, attitudes, and beliefs of CVD preventative practices and life experiences.

Methods: A convenience sample of 19 ethnic Georgian participants (18–40 years old) who were fluent in either English, Georgian, or Russian from a local private university was used. Semi-structured interviews were conducted via video conferencing utilizing an interpreter.

Results: Four themes were identified: (1) CVD and risk factor knowledge, (2) prevention attitudes, beliefs, and gender differences, (3) health literacy influences, and (4) culture and societal impacts. CVD knowledge was limited and influenced by health literacy and the current healthcare system in Georgia.

Conclusion: Cultural and societal gender norms influence cardiovascular health behaviors.

Clinical implications: Georgian nurses can play a key role in CVD education and screening for young adults in Georgia.

KEYWORDS
and beliefs, attitudes, cardiovascular disease, country of Georgia, knowledge, young adults

CARDIOVASCULAR DISEASE RISK FACTORS AND YOUNG ADULTS

Cardiovascular disease (CVD) is the largest mortality contributor globally and is highest in former Soviet Union countries (World Health Organization [WHO], 2021). Due to the fall of the Soviet Union in 1991, the country of Georgia inherited a Semashko model of healthcare that emphasized quantity of physicians over quality of service provided (Wold et al., 2013). Decades of reform that included privatization of healthcare facilities and universities has improved quality of care and health indicators (Sakvarelidze, 2020). In 2013, the Georgian parliament passed the Universal Healthcare Act

to help alleviate the nation's struggle with high out-of-pocket expenses and limited preventative care (Sakvarelidze, 2020). Even with healthcare reform and universal healthcare for publicly financed health services in Georgia, CVD is the leading cause of mortality at 46% and provides a huge economic burden to the population (Sakvarelidze, 2020; Verulava et al., 2017; WHO, 2018).

Primary and secondary prevention for CVD and risk factors in Georgia have not been explored on a large scale. This is problematic since modifiable risk factors are asymptomatic until CVD develops leading to incidents such as myocardial infarction (MI), stroke, and death (Bucholz et al., 2018; Tzoulaki et al., 2016). Cardiovascular (CV) modifiable risk factors include hypertension, hypercholesterolemia, tobacco

use, harmful use of alcohol, diabetes mellitus, and obesity due to physical inactivity and diet/nutrition (Tzoulaki et al., 2016; WHO, 2021). In Georgia, 70% of all CVD mortality is related to incidence of MI and stroke (Sakvarelidze, 2020). Due in part to asymptomatic risk factors, and despite improvement in public awareness of non-communicable disease severity, many people fail to associate CV risk factor behavior to an increase in CVD incidence (Chkhaidze et al., 2013).

Knowledge, attitudes, and beliefs are independent constructs but frequently interact (Jensen & Moser, 2008). CVD and risk factor knowledge on the individual level may help improve awareness, set goals, or identify steps toward reaching those goals. However, this knowledge does not necessarily motivate behavior change; nor does heart-healthy behavior predict CV risk factor knowledge (Bucholz et al., 2018; Lynch et al., 2006). Healthcare providers (HCPs) are equipped to understand behavior choices and develop supportive interventions to improve CVD outcomes when they understand the population's knowledge of CVD and risk factors, the population's attitudes attributed to specific preventative behaviors, and heart-healthy beliefs (Heine et al., 2021).

People make informed choices about healthy behavior when their health knowledge, attitudes, and beliefs are positively linked (Alzaman et al., 2013; Jensen & Moser, 2008). Knowledge does not directly result in healthy attitudes or motivating beliefs necessary for a person to change behavior (Jensen & Moser, 2008; Lynch et al., 2006; O'Toole et al., 2019). People are more determined to change unhealthy behavior when they have knowledge, for example, risk awareness, and believe they are susceptible to a specific disease and then have attitudes and beliefs that support preventative healthcare interventions (Alzaman et al., 2013; Jensen & Moser, 2008). Attitudes are a compilation of beliefs around a situation or object that predisposes the person to respond preferentially (Hofstede, 1998; Tedesco et al., 2015). Attitudes are specific to actual situations whereas beliefs are more abstract, but they both are evaluative in nature (Hofstede, 1998; Tedesco et al., 2015). Together both contribute to defining the culture of a specific group of people (Hofstede, 1998; Tedesco et al., 2015). Therefore, beliefs in the value of preventative behavioral action and positive attitude are associated with the probability that the behavior will be performed (Peltzer & Pengpid, 2018). When knowledge, attitudes, and beliefs are aligned with positive health behaviors, the greatest impact on one's health becomes apparent (Jensen & Moser, 2008).

Age, gender, and culture have contributed to and impacted knowledge, attitudes, and beliefs of CVD and CV risk factors. However, in Georgia, a paucity of research exists regarding the knowledge, attitudes, and beliefs of CVD and associated risk factors in young adults (Crawford et al., 2021). Young adults 18–40 years of age are less likely to have an MI or stroke than those over 40 years (Bucholz et al., 2018; O'Toole et al., 2019; Zeitouni et al., 2020). Yet, changes to modifiable CV risk factors in this age group can influence possible future episodes of CVD (Bucholz et al., 2018; Zeitouni et al., 2020). Additionally, heart-healthy lifestyle knowledge and practice started at an early age provides more sustainable positive health habits (Bucholz et al., 2018; Zeitouni et al., 2020).

Men and women may experience CVD risk factors differently, so gender should also be considered to better understand perceptions and unique physiologic differences (Ventura-Clapier et al., 2020). In Georgia, 35% of men have a risk of premature death from CVD (ages 30–70 years) while women only have a 16% risk (WHO, 2018). Additionally, CVD mortality is higher in men (56%) than women (44%) (Geostat, 2021). The World Health Organization (2018) has identified CV risk factors in Georgia as alcohol consumption, tobacco smoking, physical inactivity, obesity, high blood pressure, and high blood glucose. There are noted differences in risk factors between men and women; men had higher alcohol and tobacco use and women were more likely to be obese. However, physical inactivity, elevated blood pressure, and blood glucose were nearly the same for both sexes (WHO, 2018). These data suggest that Georgian men and women may exhibit distinct gender similarities and differences related to CV knowledge, attitudes, and beliefs that will influence CV health.

Georgian culture may influence CV knowledge and risk behaviors. Positive and negative cultural attitudes regarding various health habits, such as types of traditional cuisine and smoking tobacco use, are passed down through generations in many cultures (Chkhaidze et al., 2013; Fernandez et al., 2015). According to Roberts et al. (2013) regarding tobacco use 73.3% of Georgians were aware of the CVD risk and 28.4% for stroke risk. Yet only 30% of the same population supported the total ban on smoking in public places, demonstrating a gap between knowledge and attitudes/beliefs (Roberts et al., 2013).

A recent integrative review revealed only two articles that addressed the knowledge, attitudes, and beliefs of CVD and risk factors in Georgia, leaving gaps in the scholarly literature (Crawford et al., 2021). Georgian young adults have not been studied regarding their perspectives about CVD and the importance of early interventions to minimize CV risk factors. Therefore, a qualitative study examining knowledge, attitudes, and beliefs of Georgian young adults was conducted. The aims of the study were to (1) explore the CV knowledge and preventative practices of Georgian young adults; (2) identify any life experiences that influenced Georgian young adults' knowledge, attitudes, and beliefs related to CVD and preventative practices; and (3) identify any distinct gender differences between men and women in CV knowledge, attitudes, and beliefs.

METHOD

Interpretive description, an inductive qualitative method, was used in sampling, data collection, and analytic decisions (Thorne, 2016). This methodology seeks to identify categories and patterns within the participants' subjective and experiential testimonies. Multiple, broad categories are developed and reexamined repeatedly until themes are apparent. Through this process, themes are interpreted as applicable to clinical concepts. According to Thorne (2016) application bridges the researcher–practitioner gap while not losing sight of the whole person. The researcher's knowledge and experience of the phenomenon becomes the starting point of orienting the research design. The result is an interpretation that is both individualistic and a collective representation of the data.

Sample and setting

A convenience sample of young adults affiliated with a private university in Tbilisi Georgia, was recruited for this study. The inclusion criteria included participants who were 18–40 years of age, self-reported as ethnically Georgian, and affiliated with this university, either as a student or employee. This study followed the principles of the Declaration of Helsinki (World Medical Association, 2018) and was approved by the Institutional Review Board of Duquesne University, and the Ethics Committee of the University of Georgia.

Data collection

Data collection was conducted during the summer 2020. A gatekeeper, a nursing processor at the university who was fluent in English, Georgian, and Russian, recruited participants. All communication between the researcher and gatekeeper was done via email and internet video calls. Once the gatekeeper identified a participant, the researcher contacted the participant via email to provide details about the study, provide a link to the electronic consent form to sign, and confirm a scheduled appointment for the interview. All participant interviews were conducted via Zoom®, an audio/video internet computer platform, which recorded and provided a written transcript. Interviews were conducted in English with direct Georgian interpretation and were between 45 and 75 min. Each interview began with the researcher explaining the study and confirming the consent form signature. Data collection began by completing a verbal demographic questionnaire, followed by a semi-structured interview (see Table 1). After each interview, all personal identifiers were removed, and a participant number was assigned to each transcript by the researcher. The English transcripts were then checked for accuracy several times while listening to the audio recording. A journal was kept exploring further ideas and refining questions for future interviews throughout the data collection process.

To ensure descriptive validity and trustworthiness of the data, translation, and back-translation of interviews were performed by a second interpreter, fluent in English, Georgian, and Russian (Maxwell, 1992; Squires, 2009). A second interpreter confirmed the quality of the Georgian and English interpretations provided by the first interpreter. Any suspected errors were written in English on the corresponding transcript and reviewed by the researcher, thereby minimizing the threats to descriptive validity throughout the data collection process (Maxwell, 1992). The gatekeeper and both interpreters, signed consent forms to keep all information confidential.

Data analysis

Data analysis began after the first interview, reviewing the audio, video, and written transcripts several times. Transcripts were coded to label segments of the data to capture and identify main thoughts and categories. Tables were then created to organize categories that were related to the topics of interest and allowed for the ability to juxtapose

TABLE 1 Semi-structured interview guide

Introduction, consent, purpose of interview, and introduce interpreter
1. Can you tell me what you know about heart disease and risk factors?
2. How would you describe your health overall?
3. What do you like to eat when you are at school, at home?
4. Is exercise a part of your life, and if so what kind of exercise do you like to do?
5. Can you tell me when and why you go see a doctor or healthcare provider? What type of tasks do they preform while you are there?
6. Can you tell me about any heart disease-specific education you have received? Do you think that lay people should be educated about their health? Who is responsible?
7. Do you think anticipatory guidance is important? (What to expect as you get older? What screening tests are important?)
8. Can you tell me what you know about tobacco use? What is your view on the banned smoking in restaurants and bars?
9. Can you tell me what you know about alcohol use? What type of alcohol do you prefer?
10. Tell me about how you deal with stress. How do you take care of yourself?
11. Who do you hang out with the most? What are their beliefs about heart health?
12. Can you describe your celebrations (Supra)? What is your role? Who is the present? What does the word Supra mean to you?
13. What does Georgian wine mean to you and to Georgia? What about Georgian food?
14. Can you tell me about how COVID-19 has affected your health?
15. What role if any does religion play into your health?
16. What is the most severe disease in Georgia? What is the most prevalent? Why?
May I contact you to follow-up in the future?

segments of the data (Kalpokaite & Radivojevic, 2019). These tables were reviewed multiple times throughout the analysis process with notes documenting the evolution of the data and interpretation to descriptive and interpretive themes (Thorne, 2016). Notes were added to the researcher's journal (as was previously described).

RESULTS

Nine men and 10 women comprised the final sample of 19 participants who were interviewed from June to August 2020, during the COVID-19 pandemic. Each interview lasted between 45 and 75 min. Participants were ethnic Georgian, students (identifying number with an S) and/or faculty (identifying number with an F) from a large, private university in Tbilisi. Their ages ranged from 18 to 38 years with varied levels of education from secondary school graduates to graduate-level education, including the Ph.D. degree. Within this group, 10 students were completing their baccalaureate degrees and nine had completed graduate degrees (see Table 2).

Upon analysis, four thematic areas were identified concerning Georgian young adults' knowledge, attitudes, and beliefs about CVD and associated risk factors: (1) CVD and risk factor knowledge, (2) attitudes and beliefs and associated gender differences, (3) the influences of health literacy, and (4) culture and societal influences affecting CVD knowledge, attitudes, and beliefs within the population.

Cardiovascular disease and risk factor knowledge

General CVD knowledge ranged from admittedly knowing nothing to specific CVD diseases (e.g., MI or stroke). Two young students, one man and one woman (S14 and S9) stated they did not know anything about CVD or CV risk factors while an older faculty member (F15) stated it was a complicated question and did not have an answer. Several students (S2, S5, S8) and faculty (F12) knew that CVD was very common in Georgia and the world. One young man (S8) even described CVD as, "the killer of people." Only one 19-year-old (S2) had a more comprehensive understanding of CVD that involved different populations affected (e.g., "80% of [Georgian] population has heart problems"), what diseases it included (e.g., "leads to stroke"), and a risk factor (e.g., smoking).

Sixteen participants (representing all subgroups) associated knowledge of CV risk factors with living a healthy lifestyle. Four men (S1, S8, F15, F18) and two women (S3, F10) identified one or two risk factors, with only 25% of the total sample (S2, S4, F11, F12, F19) reporting four or more correctly (see Table 3). The three participants who recalled four or more risk factors either had a chronic disease, a relative with CVD, or were keenly interested in studying CVD health in their free time; the latter being a first-year university student who had read a scientific paper on bradycardia and became interested in the topic. The most frequently identified risk factors for CVD were nutrition, alcohol consumption, exercise, and smoking tobacco. Smoking tobacco was mentioned most often. Hypertension and hypercholesterolemia were rarely mentioned and were not always directly associated with nutritional or exercise considerations by the participants. Four women (S3, S4, S11, S16) and one man (S1) were aware that increased stress or decreased sleep were risk factors; however, these were not commonly identified as adding to CVD risk.

Nutrition and alcohol consumption

Faculty were more likely that students to explain that a healthy lifestyle included a heart-healthy diet (e.g., low fat, low-sugar, and high-vegetable diet). Neither students nor faculty defined food portion sizes, only categories and specific types of food. One woman (F11) believed that a heart-healthy diet meant decreasing cholesterol in the diet because, "food that contains cholesterol, like junk food and fats, yes…This is one of the risk factors which affects the cardiovascular system." Five women (S4, F10, F11, F16, F17) and three men (S2, S5, and F12) stated that excessive alcoholic beverage consumption was a risk factor for CVD. Excessive alcohol consumption (e.g., to the point of being drunk) causes health and CVD problems. Risk for obesity was connected to increased simple carbohydrates and fatty food intake and minimal daily exercise.

Exercise

Several men (S2, F12, F19) and women (S4, S5, S13, F17) agreed that sustaining a healthy lifestyle included regular exercise. Yet, no participants directly related physical inactivity to increased CV risk and were unaware of the specific guidelines for regular exercise (e.g., type of exercise, length of time, and frequency). Commonly mentioned exercise programs included playing a team sport, swimming, walking, or focusing on exercises that tone specific muscle groups (e.g., pushups, sit-ups). Eight participants (S6, S7, S8, F11, F12, F14, F16, F19) also discussed physical exercise as their preferred method of relieving stress, but not as a mechanism for reducing CV risk at the same time.

Smoking tobacco

Twelve participants (S2, S4, S5, S6, S8, F10, F11, F12, F13, F17, F18, F19) were acutely aware that smoking tobacco is a CVD risk factor. Several nonsmoking men (S6, F12) and women (S5, S7, F16) also expressed a distaste for secondhand smoke due to the smell with one participant stating, "passive smoke is more dangerous than active one [smoke] because the smoke that goes to your lungs can be quite dangerous for your general health." One 30-year-old man (F18) believed that "everyone [all Georgians] has general information about [the] impact and effect of smoking." Even the three current smokers

TABLE 2   Demographics of participants

	All
Age (years)	
18–24	9
25–34	7
35–39	3
Gender	
Male	9
Female	10
Profession	
Student undergraduate	10
Faculty	9
Salary (in Georgian Lari)[a]	
Less than 10 K	1
10 K–24,999 K	14
25 K–30 K	4
Past medical history	
None	15
Chronic disease	4

[a]3.10 Georgian Lari is equivalent to 1 USD.

TABLE 3 CVD risk factor knowledge by number of participants

	Number of participants that listed specific risk factor
World Health Organization modifiable/behavioral risk factor	
Smoking tobacco	12
Increased alcohol consumption	8
Physical inactivity	7
Unhealthy diet	6
Obesity	3
Physical inactivity	5
Diabetes (hyperglycemia)	3
Hypertension	2
Cholesterol	1
World Health Organization underlying determinants of CVD	
Hereditary factors	5
Stress	5
Environment (Pollution)	2
Old age	1
Risk factors listed participants but not World Health Organization	
Infections	1
Female problems	1
Sleep	1
Participants that could not list any risk factors	1

(S14, F17, F18) admitted knowing this information. Additionally, both men (F12, S14) and women (F11, F13) alluded that they knew smoking cessation aids were available, but they were not frequently used by participants or acquaintances when attempting to quit smoking.

Cardiovascular disease and prevention: Attitudes, beliefs, and gender differences

Participants' lack of heart-healthy behaviors and presence of CVD risk factors were manifestations of their individual attitudes and beliefs. Several men (S1, S6, S8, S14, F18) and women (S3, S7, S9, F11, F13, F16, F17) mentioned their diet regularly consisted of fried and processed foods, alcoholic beverages, and a lack of physical activity, yet they also acknowledged that these behaviors might be affecting their health. However, those who listed four or more risk factors (S2, S4, F11, F12, F19) also engaged in the least amount of risky CV behavior with men and women equally represented.

Nutrition

Attitudes toward low fat, high vegetable diet was different than what participants reported eating for snack or mealtime. One woman (F11) said, "I like junk food. I like fatty things." Two men (S6, F12) and one woman (S9) mentioned eating salads consisting of lettuce and vegetables, but these were often mixed with mayonnaise or covered in mayonnaise-based salad dressing.

Dietary choices have changed due to pandemic restrictions for seven men (S1, S6, S8, S14) and women (F11, F16, F17). The shelter-in-place rules limited access to fast-food restaurants, thereby necessitating more home-cooked meals that at times were healthier than fast food. However, 12 participants (S1, S2, S6, S7, S8, S9, F11, F13, F14, F16, F17, F18) believed that much of their diet, including Georgian traditional dishes, were delicious but not very healthy. Traditional dishes often contain fat, oil, salt, and large amounts of simple carbohydrates (e.g., white bread). Traditional dishes are also familiar, affordable, and easily accessible, despite the lack of heart-healthy choices. When eating away from home, cost and convenience were more influential than choosing food that was heart healthy. Food choices did not differ between men and women.

All participants discussed their drinking habits, especially during celebrations. Three faculty (F11, F12, F17) believed having one glass of wine with dinner had a positive effect on for their health but did not specify CV health. Each participant knew how many alcoholic beverages they could consume per occurrence before they became inebriated. Women, both students and faculty, set personal limits ranging from two to five glasses of wine while men, both students and faculty, stated their limit varied from five glasses to a liter and half of wine at Supras, (i.e., celebration or feast).

Exercise

More students (S3, S4, S5, S8, S9, S14) than faculty (F10, F16) recognized the importance of exercise but did not make it a priority in their everyday lives. They reasoned that busy schedules, inadequate gymnasium space, lack of green spaces, and high pollution in the capital city were to blame for their inactivity. Exercise types differed between men and women. Men were more likely to exercise or train with vigorous activities (e.g., running, swimming, or team sports) and in public places (e.g., gymnasiums or outside in parks) Women exercised at home with videos focusing on specific muscle groups, or walking alone or with their dog or friend around their neighborhood. Moreover, three women (S4, F16, F17) believed they needed to lose weight (e.g., reducing nutritional intake and exercise) but did not relate it to CV risk factors. Only one man (S14) was preoccupied with maintaining a healthy weight.

Smoking tobacco

According to one man (F18), most of the Georgian population smoke, despite their knowledge of the health risks. Three women (S3, F10, F17) and two men (S14, F18) believed they (or their loved one) either have no control over this habit because they are addicted, or smoking makes them feel good and this takes precedent over health. Two men and one woman were current smokers; two faculty had no

desire to quit (F17 and F18), while the student had attempted several times to quit without success (S14). Participants (F12, S5) who either quit themselves (S5) or knew of someone who stopped smoking (F12) could pinpoint a critical life event (e.g., pregnancy, birth of their child, or death of a loved one related to smoking) that changed their attitude and belief about smoking. Only one studious student (S2) mentioned that tobacco use has adverse effects on CV health. That notwithstanding, several participants in their teens and 20s (S1, S3, S4, S5, S6, S8, S9, F11) and two in their 30's (F10, F12) said that they talked with their family and friends about the health benefits of smoking cessation. Those subjects under 30 years of age were more committed to promoting smoking abstinence or smoking cessation among friends and family. One 19-year-old (S4) with no interest in smoking, stated, "I am always talking to everybody to give up [stop smoking].".

Participants considered smoking to be more socially acceptable for men than women. Of the participants who stated a family member smoked, only male relatives were listed (S1, S2, S4, S5, S8, S9, F10, F11, F13, F17). Furthermore, young men growing up in Georgian homes were not discouraged from smoking by their mothers, instead they were asked to smoke outside of the home environment (S4).

Health literacy influences on CVD knowledge, attitudes, and beliefs

Health literacy, or a person's ability to find, understand, and use health information (Center for Disease Control and Prevention, 2021) significantly impacted Georgians' CV knowledge and preventative risk factors. Health promotion and disease prevention educational sources varied greatly with each participant. General health education happened sporadically during primary and secondary schooling (S9), with CVD included occasionally. Students (S2, S4, S9) recalled specific stop-smoking campaigns during primary school. Three women (F10, F11, F17) in the healthcare field, (e.g., medical doctors and dentists) referred to their anatomy class during their first years at university as the last time they received CVD education. Additionally, a nursing student (S1) stated that risk factors were omitted from disease overviews in anatomy and physiology course. Secondary sources, such as, TV shows, blogs, advertisements, social media, and the internet were the most named sources, with the internet and social media stated most frequently. Mobile phone applications documenting daily activities (e.g., daily water intake or daily exercise) also provided general healthy lifestyle information specific to CVD that the user hoped to achieve. Healthcare professionals were the least identified CVD education source (S6, F19).

All participants had broad knowledge of positive health behavior information but do not connect it specifically to reducing CV risk factors. A low-fat, low-sugar diet and regular daily exercise minimize risk factors for other non-communicable diseases besides CVD, such as cancer, and diabetes. General health promotion information (e.g., smoking cessation, low-fat diets) is shared directly and indirectly through many sources without specifically informing about other CV risk factors, such as hypertension and hypercholesterolemia. When addressing health promotion education, one man (F18) used the example, "they [the Georgian people] may have heard of the word 'mammogram' but do not realize the importance.".

Participants acknowledged that some of their CVD education came from a friend or family member with the disease, which provided them with a more significant connection to CVD. They acquired this knowledge by observing those who had the condition or listening to them recount their personal experiences, leading to a stronger belief of CVD severity and susceptibility. Three students (S6, S7, S14) and one faculty (F17) believed CVD is the most severe disease in Georgia and had a friend or family member with CVD. However, nine participants (S4, S5, S8, S9, F12, F13, F15, F16, F18) believed cancer (e.g., lung, GI) to be the most severe disease in Georgia over CVD. One woman (S5) concluded that CVD was more severe due to its sudden emergence unlike cancer because "cancer affects your life, but if you can catch this one [cancer] from early stages, you can cure them.".

Healthcare providers were the least mentioned source of CVD education. Two women (S8, F13) stated that family physicians "are just providing medication education," but believed that "it is really important [for the public] to have more knowledge about your disease." Nine participants (S5, S6, S8, F10, F11, F14, F15, F16, F18) did not remember their physicians or nurses checking their blood pressure or performing a physical assessment. One woman (F11), whose blood pressure had not been measured during her last appointment, reasoned that blood pressure was not related to the focus of her complaint at that time. Only two men (F12, F19) prioritized having their blood pressure checked regularly.

Cultural and societal influence on knowledge, attitudes, and beliefs

Cultural and societal traditions influenced CVD knowledge, attitudes, and beliefs. The Georgian culture has centuries old traditions, which continue to thrive today. One of these traditions, the supra, is considered crucial to bestowing the Georgian culture to the next generation. Supras on average occur once or twice a month and are a smorgasbord of food and wine representing the different regions in Georgia. They are filled with toasts and eating food for many hours with friends and family, celebrating the people and culture of Georgia.

Many participants (S4, S6, S8, S9, F11, F12, F13, F17, F18, F19) believed that the traditional Georgian cuisine found at a supra, consisting of heavy meats, cheeses, bread, and cooked vegetables, was necessary for sustaining the Georgian culture. Food was a crucial element of Georgian culture and despite the CV health consequences, changing to a heart-healthy diet would diminish Georgian culture. One man (F12) openly admitted that they are not thinking about CV health when attending a supra but believed that food and wine with friends and guests promoted good communication in comfortable surroundings. Another man (S9) felt that if the cuisine had reduced

amounts of salt, fat, and simple carbohydrates, the Georgian culture would "cease to exist." Healthier versions of traditional Georgian food do not exist, nor were the participants interested in creating alternative traditional Georgian cuisine.

Supras were not complete unless Georgian wine was served and toasted regularly throughout the event (S7, S8, F11). Moreover, Georgians value guests as a blessing and toast wine as a token of appreciation to their guests. During supra toasts, one glass of wine per person is raised in tribute to God, the person, country, and/or family value (e.g., love) and then consumed completely. Between toasts, the attendees refill each other's glasses in preparation for the next toast. Toast participation is compulsory, especially for men; if one does not drink at a supra, then participants believe the person is not Georgian. Georgians' guests are expected to participate as well.

DISCUSSION

This study presents what is known and believed by Georgian young adults about CVD and risk factors influenced by gender and culture. Georgian young adults' knowledge of CVD-specific risk factors in this study varied from previous studies from the United States (US) and Turkey. Only two participants listed hypertension as a risk factor and one listed hypercholesterolemia in this study. This is considerably less than in a US study in which over 60% of participants recognized hypertension and hypercholesterolemia as risk factors (Bucholz et al., 2018). Moreover, in a similarly developed country of Turkey, university students listed hypercholesterolemia, stress, and hypertension most frequently as CV risk factors (Güneş et al., 2019). In Georgia, hypertension is responsible for 62.5% of all CVD cases (Sakvarelidze, 2020). The low number of participants reporting hypertension as a CV risk factor may be evidence of a knowledge deficit related to CVD.

Knowledge alone cannot predict positive changes in risk factor behaviors (Bucholz et al., 2018; Lynch et al., 2006; O'Toole et al., 2019). Young adults have expressed an open attitude towards and availability of healthy foods to incorporate healthy lifestyle changes to eliminate CV risk factors, but do not necessarily believe or practice these behaviors (Lynch et al., 2006; Tran et al., 2017). For instance, participants in this study shared lifestyle behaviors that are often seen in university settings. Binge drinking, low physical activity, increased weight gain, and poor diet choices have been seen within other university settings (Peltzer & Pengpid, 2018; Tran et al., 2017). McKenzie et al. (2020) reported that only 37.3% of Georgians sampled consumed fruits and vegetables and Mozaffarian et al. (2014) reported that Georgians had the highest levels of sodium ingested in relation to CVD; both examples are supporting points stated by participants in this study.

Since Georgian traditional foods contain high fats and salts, and binge drinking is common during Georgian supras (Mozaffarian et al., 2014; Russell et al., 2019), maintaining tradition and a heart-healthy diet conflict with each other (Barolia et al., 2019). Participants of a supra are encouraged to partake regardless of their own personal preferences. In fact, it would be better to not attend than to attend and abstain (Barolia et al., 2019; Skhirtladze et al., 2016). Maintaining cultural identity usurps eating a heart-healthy meal; participants expressed their proudness of being Georgian in their love of the supra tradition. More research is needed by Georgian gastronomy experts to decrease the fat and salt while not losing the flavor that Georgians expect in these dishes.

Other barriers to changing to a heart-healthy diet lie in the communal aspect of Georgian culture. Most of the participants in this current study live in multigenerational households with shared foods (Skhirtladze et al., 2016), therefore, changing the diet would require nearly all family members to make these changes for it to be successful (Barolia et al., 2019). In this stage of life, only five participants were married and the rest either lived with their parents or a family relative. Moreover, in a family oriented society, traditional family roles might still be held by older generations and not yet passed down to this current generation (Skhirtladze et al., 2016). Both men and women in this current study reported that they either cooked or had strong influence over heart-heathy food prepared in the home. One possiblility for this finding may be because both men and women were working outside the home, family roles were becoming more blurred (United Nations Development Programme, 2013). Another possibility is the COVID pandemic may have influenced findings but this connection is not clear.

Gender differences in CVD risk factors (both knowledge and behavior) varied slightly but were most significant related to smoking. Participants reported more male smokers than female smokers. A study conducted by the United Nations Development Programme (2013) showed 77% of respondents believed it is unacceptable for Georgian women to smoke cigarettes. Combining these two findings implies that smoking is a masculine-acceptable activity in Georgia, though the question was not explicitly asked to the participants. Another study conducted in the former Soviet Union (including Georgia) showed between 40% and 60% of men and 1%–16% of women were smokers (Georgia men 52.8% and women 6.1%) (Roberts et al., 2013).

Smoking in Georgia has decreased in recent years, which is attributed to several different events. Over the last decade, Georgian private and public sectors have dramatically changed the Georgian tobacco use landscape by implementing tobacco-free laws in schools and public places (Agaku et al., 2015), advertising the increased dangers of using tobacco (Mir et al., 2013), and developing non-communicable disease programs addressing tobacco use as a risk factor (Berg et al., 2019). The government and community coalition produced a comprehensive smoke-free air policy, which passed in Georgia legislation in 2018 (Berg et al., 2019), and according to the current participants, is being upheld. This may also explain why all smoking and non-smoking participants in this study favored no smoking in public venues despite initial resistance due to the inconvenience.

Georgian young adults are not receiving regular health education and screening regarding CVD and CV risk factors. Modifiable risk factors and lifestyle behaviors need to be instituted during these

young adult years to decrease CVD in the future (Liu et al., 2012). Currently, Georgian physicians and nurses do not routinely screen for CVD risk factors, for example, hypertension and hypercholesterolemia, at every visit according to the findings. It is imperative that these basic CV risk factor screenings occur by the family physician or nurse at least once a year (Bucholz et al., 2018; Zeitouni et al., 2020).

In this study, participants believed that a patient should receive regular health promotion and disease prevention from HCPs. According to Muhihi et al. (2020), most young adults (from non-western cultures) received information about CV risk factors from relatives/neighbors and the media with slightly over 25% from HCPs. This research was similar to the findings of this study. Yet, researchers have shown that when HCP interventions involve patient education, patients have significantly higher levels of sustained knowledge and positive health promotion practices to decrease modifiable risk factors (Heine et al., 2021).

In Georgia, medical and nursing education programs vary and may not emphasize health promotion and disease prevention. Nursing education is considered technical education and one that does not require a university degree to practice as a nurse (Richardson & Berduzli, 2017). This type of education can lead to a lack of knowledge and focus on holistic care (Squires et al., 2019). Additionally, if physicians and nurses were educated when Georgia was in the former Soviet Union, health promotion related to CVD was not prioritized (Rechel et al., 2014; Wold et al., 2013). The focus instead would have been on identifying and assisting in cardiac emergencies in tertiary care (*Healthcare resource guide: Georgia*, 2018; Rechel et al., 2013). Physicians and nurses are also not required to complete regular continuing education hours for practice (Law of Georgia on Medical Practice, 2015; Richardson & Berduzli, 2017; Wold et al., 2013). Therefore, changes are needed in educating and training HCPs to deliver this preventative information improves health literacy and CVD risk factor management (Tavakoly Sany et al., 2018).

Nursing implications

This research illustrates the need for and importance for HCPs to provide both screening and education about CVD. Currently, nurses in Georgia are limited in performing fundamental procedures such as taking vital signs, carrying-out routine health assessments and educating patients on CV risk factors. Georgian universities are now offering nursing bachelor's degree programs that may change how nurses are perceived and may include education about health promotion and prevention services. However, the status of nursing remains low as a career choice, which discourages enrollment in nursing programs (Richardson & Berduzli, 2017).

As the healthcare system in Georgia progresses, nurses should assume a more active role in facilitating preventive patient care priorities and national policy changes that will influence CV health (Richardson & Berduzli, 2017). A collaborative approach by the government, schools, physicians, and nurses may have a significant impact on providing preventative education to the Georgian population (Kurth et al., 2016), especially since these findings are transferable to other young adult populations in Georgia. Nurses themselves could benefit from additional education to identify individuals at risk for CVD that could then be utilized in clinical or school settings for prevention education. For example, young Georgians could benefit from early education in the primary and secondary schools about CVD risk factors and healthy lifestyle changes thereby influencing future CVD outcomes (Gilberson & Graves, 2015; Montelpare et al., 2018). Moreover, nurses could initiate CVD education for the public during regular primary care appointments and in other healthcare settings (Hannan et al., 2022). Currently, the Georgian government does not require nurses to pass a licensure exam nor does a nursing credentialing body exist in the country (Kurth et al., 2016; Richardson & Berduzli, 2017). Nurses need only to pass an exit exam from a nursing program to begin practice (Wold et al., 2013). Systematic and collaborative efforts between all healthcare entities would serve to improve nursing standards and practice. Finally, nurses should take an active role in the nursing associations in Georgia to work collaboratively alongside other nurses and healthcare professionals to develop these initiatives (Santos et al., 2016).

Limitations

This study was conducted during the first year of the COVID-19 pandemic, resulting in interviews completed via video conferencing. This approach did not allow observational data to be obtained other than facial expressions However, the primary researcher conducting this study lived in the country for more than 6 years and was familiar with many of the non-verbal gestures and facial expressions, all of which added to the understanding and interpretation of the data (Ryen, 2003). Additionally, this sample was recruited from one university setting where many participants were highly educated. This may have influenced the results, as populations with more education typically have fewer modifiable risk factors and more knowledge about risk factors (Sarpong et al., 2017). Choosing a population with a lower level of education may provide a different perspective on this topic. Finally, asking participants to recall something that may have a negative stigma attached to it, such as smoking or alcohol consumption within their culture, could have led to potential social desirability bias, or minimizing reports of participation in high-risk health behaviors (Althubaiti, 2016). Efforts to minimize bias included building rapport with participants, phrasing questions in open-ended, neutral format, using triangulation between/among the interviews, observing of facial expressions during the interviews, and making journal entries (Althubaiti, 2016; Morse, 2015).

CONCLUSION

Georgian young adults displayed a basic knowledge of CVD without fully understanding the components of a heart-healthy lifestyle

to minimize CV risk factors. Georgians wrestle with conflicting priorities and minimizing negative risk factor behaviors. Men especially struggle with the masculine view of smoking and compulsory view of drinking traditions during a supra. More research is needed to study these gender difference and lessen the stigma related to them. Finally, physicians and nurses must have an opportunity to become more involved in promoting a heart-healthy lifestyle. Educating and encouraging nurses to take a more active role in cardiovascular-related screening and patient education will serve as a strong foundation on which to build positive health beliefs and CVD prevention.

CLINICAL RESOURCE

National Center for Disease control and Public Health Care Statistical Yearbook 2020, https://ncdc.ge/#/pages/file/06d0d272-e413-4ae8-914a-4a0a42e98d53.

World Health Organization Cardiovascular Diseases, https://www.who.int/health-topics/cardiovascular-diseases#tab=tab_1.

International Institute for Qualitative Methodology: Introduction to Interpretive Description Methodology, https://www.ualberta.ca/international-institute-for-qualitative-methodology/webinars/master-class-webinar/iiqm-webinar-april-30-interpretive-description.pdf.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

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