



**Promoting Adolescent Health in Palestine:
Initiatives and Research.**

تعزيز صحة جيل المراهقة في فلسطين: مبادرات وأبحاث.

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Birzeit University

Palestine

2023



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This thesis was submitted in partial fulfillment of the requirements for the Master's in Public Health Degree from the Institute of Community and Public Health at Birzeit University, Palestine.



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Acknowledgments

I would like to express my deep gratitude to my thesis supervisor, Dr. Niveen Abu-Rmeileh, for her guidance, advice, and valuable time. It has been an enriching experience that I am honored to be part of. Your efforts and support will always be appreciated.

I would also like to extend my thanks to my second supervisor, Aisha Shalash, for her guidance and for sharing her experiences without limits throughout the whole journey. This would have been much more challenging without your generous advice.

I'm extremely thankful to my husband and parents, who have been an exceptional source of strength and encouragement and without whom I would never make it this far.

A special thanks to my precious son, though too young to understand the complexities I was facing. His presence and patience were the guiding light throughout this journey.

I'm also grateful for all the authors who were involved and helped in both reviews for their hard work, and finally, for the Institute of Community and Public Health members for their continuous support.

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الملخص:

يشكل جيل المراهقة نسبة كبيرة من السكان في جميع أنحاء العالم، ولصحتهم تأثير كبير على الأجيال القادمة، وعلى نمو بلدانهم وازدهارها. على الرغم من ذلك، فإن البحث الذي يهدف إلى تقييم حالتهم الصحية غير كاف ولا يلبي احتياجاتهم الفعلية. نهدف من خلال دراستنا، إلى مراجعة وتفحص الوضع الحالي للمراهقين في الأراضي الفلسطينية المحتلة من حيث الأبحاث والبرامج والتدخلات التي يتم إجراؤها لتحسين صحتهم ورفاههم. نتعامل أيضًا مع مواضيع أكثر حساسية لا يتم أخذها في الاعتبار عادةً، وهي الصحة الجنسية والإنجابية في هذه الفترة التكوينية والحساسة من الحياة، حيث تهمل الكثير من المجتمعات هذا الجزء من الصحة وخاصة المجتمعات المحافظة التي تعتبرها من المحرمات وتحاول تهيمشها واستبعاد الذكور منها.

من أجل تلبية الاحتياجات الصحية لجيل المراهقة بشكل فعال، قمنا بإجراء مراجعتين لتحديد النطاق. مكنتنا هذه الطريقة من إجراء بحث شامل في الأدبيات المتاحة، وفحص كل دراسة بعناية لمعرفة مدى ملاءمتها بناءً على معايير إدراج تم تحديدها مسبقًا. ثم قمنا باستخراج وتحليل البيانات اللازمة للإجابة على سؤالنا البحثي. من خلال استخدام هذا النهج الشامل، تمكنا من اكتساب فهم أفضل للمجال الواسع لصحة المراهقة.

من خلال المراجعة الأولى بتحليل الأدبيات التي خضعت لمراجعة الأقران والرمادية لتحديد الموضوعات والأساليب الأساسية المستخدمة في المشاريع البحثية والتدخلات الخاصة بالمراهقين في الأرض الفلسطينية المحتلة. كان الهدف هو تقييم الحالة الصحية لجيل المراهقة وتحديد المجالات التي تم التغاضي عنها والتي تتطلب المزيد من التدخلات. كشفت المراجعة أن الأمراض غير المعدية كانت أكثر المواضيع التي تم تناولها، وكان التوعية الصحية هي الطريقة الأكثر استخدامًا. على الرغم من هذه الجهود المبذولة إلا أنه وجد أن هناك نقص وحاجة إلى التطوير في موضوعات الصحة الجنسية والإنجابية في كل من الأبحاث والبرامج التي تستهدف جيل المراهقة، وخاصة الصحة الجنسية والإنجابية للذكور والتي وجد أنه يوجد بها نقص كبير.

بناءً على ذلك، أجرينا مراجعة نطاق ثانية حللت المقالات التي راجعها الأقران، لدراسة المواضيع والأساليب الرئيسية التي تناولتها برامج وحملات الصحة الجنسية والإنجابية التي شملت الذكور في جميع أنحاء العالم. من خلال هذه المراجعة وجدنا أن نهج الصحة الجنسية والإنجابية الأكثر استخدامًا كان الأنشطة التفاعلية وأن الموضوع الأكثر تناولًا للذكور كان تنظيم الأسرة. إضافة إلى ذلك، وجدنا أن هناك ندرة في تدخلات وبرامج الصحة الجنسية والإنجابية في منطقة شرق البحر الأبيض المتوسط، إضافة إلى نقص التدريب الكافي للمعلمين ومقدمي الخدمات المشاركين في تلك الحملات.

نستخلص من خلال مراجعاتنا أنه على الرغم من أنه يوجد هناك جهوداً مستمرة في أبحاث جيل المراهقة والتي تركز بشكل كبير على الصحة النفسية، فإن التدخلات التي تستهدف هذا الجيل لا تزال غير كافية، وهناك حاجة إلى مزيد من الجهود في هذا المجال. علاوة على ذلك، فإن البحث الذي يناقش الصحة الجنسية والإنجابية لجيل المراهقة ضئيل للغاية، ولا يتم استهداف الذكور على وجه التحديد في أي من هذه المبادرات. يحتاج مقدمو الخدمات إلى أن يكونوا مدربين تدريباً جيداً للتعامل بشكل صحيح مع الأشخاص من هذا الجيل في هذه الفترة الحساسة عند تدريس هذا الموضوع الحساس. من خلال الاستفادة من نتائج مراجعاتنا، يمكن لصانعي السياسات تحديد الفجوات في صحة جيل المراهقة والعمل على تحديد الأولويات التي يجب معالجتها بشكل عاجل. كما أن هذه المراجعات تساعد في بناء برامج الصحة الجنسية والإنجابية القائمة على الأدلة لجيل المراهقة، والتي يمكنها تلبية احتياجاتهم الفريدة.

Summary:

Adolescents constitute a considerable portion of the population worldwide, and their health significantly affects future generations and the development and prosperity of their countries. However, research to assess their health situation is inadequate and doesn't meet their needs. Through our study, we aim to assess the current situation of adolescents in the occupied Palestine in terms of research conducted and interventions undertaken to improve their health and well-being. We also address a more sensitive area that is not usually taken into consideration, which is the sexual and reproductive health (SRH) in this formative and sensitive period of life; where many communities overlook this part of health, especially conservative societies that consider it as a taboo and try to marginalize it and exclude males of it.

In order to effectively address the health needs of adolescents, we conducted two scoping reviews. This method enabled us to conduct a thorough search of the available literature, carefully screening each study for relevance based on predetermined inclusion criteria. We then extracted and analyzed the necessary data to answer our research question. By utilizing this comprehensive approach, we were able to gain a better understanding of the broad area of adolescent health.

The initial review analyzed peer-reviewed and grey literature to determine the primary topics and methods used in research projects and interventions for adolescents in the occupied Palestine. The goal was to assess the health status of adolescents and identify overlooked areas that require further interventions. The review revealed that non-communicable diseases were the most frequently addressed topic, and health awareness was the most commonly utilized method. However, the lack of SRH topics in both

research and interventions was identified, and SRH interventions often overlooked males.

Therefore, we conducted a second scoping review that analyzed peer-reviewed articles to investigate the main domains and methods addressed by SRH interventions and programs that included males worldwide. We determined that the most utilized SRH approach was interactive activities, and the most addressed domain for males was family planning. In addition, we detected a dearth of SRH interventions in the Eastern Mediterranean area (EMR) and a lack of adequate training for the teachers and providers involved in those campaigns.

Our reviews indicate that while there are ongoing efforts in adolescent research with a major focus on mental health, interventions targeting adolescents are still insufficient, and more efforts are needed in this area. Furthermore, research discussing SRH for adolescents is minimal, and males are not specifically targeted in any of those initiatives. Providers need to be well-trained to properly deal with adolescents in this sensitive period when teaching this sensitive topic. By utilizing the findings of our reviews, policymakers could identify the gaps in adolescent health and work on determining the priorities that need to be tackled urgently. It also aids in building evidence-based SRH programs for adolescents that are able to meet their needs.

Chapter I: Introduction

Adolescents aged 10-19 represent 16% of the total population worldwide and constitute a significant part of their communities (1). The exclusiveness of this period comes from the extensive physical, mental, and social changes essential for the transition into adulthood, making adolescence a formative period of growth and development that needs special attention and care (2). Consequently, recognizing adolescents as a valuable investment in their countries' future becomes imperative to avoid wasting their potential and guaranteeing a better future for all (3).

It is widely acknowledged that improving and protecting adolescent health will yield benefits for their well-being in the future and extend for subsequent generations, as those adolescents will grow up as healthy adults who are more capable of creating healthy environments and communities (4, 5). Moreover, adequate investment in adolescent health can also bring economic advantages for countries that allocate resources to healthcare effectively. The allocation of resources toward prevention and early interventions for adolescents could effectively reduce the burden on healthcare systems, thereby enabling the redirection of resources toward promoting overall well-being (6).

During adolescence, young people are at a crucial stage where their decisions can significantly impact their future lives; in this transitional period, adolescents are open to new experiences and adventures, are full of energy, and are more inclined toward gaining negative behaviors from their peers and the surrounding environment, those behaviors impact their health negatively (2), and without the appropriate knowledge and guidance,

those experiments and behaviors could bear adverse impacts on their future (3). It was found that more than 70% of deaths in early adulthood result from risky behaviors started during adolescence (6).

Consequently, enormous efforts should be directed toward promoting adolescents' health. Neglecting adolescent health could compromise both the duration and quality of human life and exacerbate suffering, inequity, and instability (6, 7). Effective campaigns and research addressing adolescents' unmet health needs are essential to ensure these young individuals' healthy and prosperous futures.

Understanding all the challenges related to adolescent health can aid in developing comprehensive programs and strategies tailored to adolescents' needs (8). Such strategies should focus on education and developing services that enhance young people's participation, as well as employing methods that have been shown to produce favorable outcomes, such as peer education and interactive techniques. Using evidence-based interventions to promote adolescents' health will improve the quality of life and the economy of the populations investing in adolescents' health (6).

In the occupied Palestine, which consists of East Jerusalem, the West Bank, and the Gaza Strip, youth aged less than 25 years makeup 30% of the population, which is considered a "young society"; with almost half being males (9). Several conditions compromise the health and well-being of Palestinians. One challenge is the problematic political environment and the ongoing war (10). This conflict directly affects adolescents, and instead of being a unique opportunity for health investment, adolescence is negatively impacted. Experiencing political violence can threaten adolescents' health, affecting their mental health and increasing their ability to engage in risky behaviors (11).

Another challenge facing the health promotion of Palestinians in general and adolescents specifically is that the health services are provided by several parties, including the Palestinian Ministry of Health (PMoH), the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), non-governmental organizations (NGOs), and the private sector (12). The allocation of services across multiple providers leads to the dispersion of health data and efforts to promote health among these diverse entities, consequently reducing their efficacy in improving health outcomes (13).

Moreover, the occupied Palestine is confronted with limited resources, which hinders its ability to initiate various health-related initiatives and research projects (14). This was found in a study carried out in Gaza which demonstrated a lack of health programs specifically designed for adolescents. This study also highlighted many obstacles, including socioeconomic, structural, and cultural barriers, which hinder adolescents' utilization of these programs and services, particularly females (15).

As a result of the challenges mentioned above, several aspects of the healthcare system are affected. On the one hand, it has been noted that there is a scarcity of interventions and research efforts in the occupied Palestine and health surveys aimed at evaluating the situation and offering essential information about the community's specific needs (16). On the other hand, the constraint of resources necessitates that the government strategically allocate available funds, resulting in a situation where not all groups and dimensions of adolescent health are adequately addressed(12).

The scarcity of interventions and research studies analyzing the current situation of adolescents has been noteworthy in recent times (16). The existing body of research on the health of adolescents and the challenges they face in participating in educational

interventions designed to improve their overall well-being is inadequate and is not able to address the specific needs of this population. Information about the existing initiatives, whether interventions or research projects, must be improved. It is imperative to promptly examine the current situation regarding the topics being addressed, methods used, and research done for adolescents to identify their actual needs and customize interventions that effectively respond to those needs.

Among the effects of the challenges faced by the healthcare system in the occupied Palestine, the government must prioritize allocating limited resources to optimize their utilization (12). Resources are allocated based on the needs of each region, which often leads to the neglect of some areas, such as sexual and reproductive health (SRH). Although the occupied Palestine has some organizations that address SRH, those programs must be more comprehensive and explicitly tailored to adolescents. Most of these programs are aimed at mothers, with only a few aimed at adolescents, particularly adolescent males (17).

Several studies found that SRH education needs to be improved for adolescents in the occupied Palestine in general, with a further focus on female reproductive health in the conducted campaigns, making male inclusion in SRH interventions even less (17). This is mainly because the engagement of males requires massive inter-sectoral efforts and funding, which generally needs to be improved in the developing countries' public sectors. After all, the lack of funding forces them to prioritize and focus on female health, which suppresses the required change (18).

Furthermore, cultural norms, stigma, and the lack of acceptance of the education of SRH topics, whether inside or outside of school, impede the implementation of educational

programs for adolescents, as parental consent is usually required for participation (17). This may make many policymakers cautious of such programs due to concerns regarding potential increases in sexual activity and other unintended consequences. As a result, they might attempt to limit their spread and effectiveness, resulting in a gap between the services provided and the actual needs of adolescents. This indicates an urgent need of those conservative communities for SRH improvements, such as secure access to accurate information and practical, safe, and affordable contraception should be provided so that adolescents are empowered, well-informed, and can make the right SRH choices (19, 20).

In the last couple of years, the PMoH has sought an interest in reaching adolescent health needs, a clinic for youth was developed in Hebron to involve youth more in health services provided by the ministry and to improve their overall well-being. However, after a short period, the clinic closed due to a lack of funds. Even though the Hebron clinic was unsuccessful, the ministry continues to try to maintain the health of youth. A new department called the 'adolescent and youth health department' was created. It is concerned with following up on the health needs of young people. This department is aiming to launch a new strategy serving adolescents' health.

However, successfully developing and applying this strategy requires identifying the population's needs. This could be done by conducting detailed research on the organizations working in this field. The results they have yielded will clarify the gaps in research and the health needs of adolescents in the occupied Palestine. In addition, identifying which topics haven't been addressed and why is also crucial for the success of the ministry's project.

Additionally, the limitation in SRH campaigns in the LMICs and humanitarian settings including the occupied Palestine, highlights an important aspect that should be further investigated(21). It is noticed that most reproductive health-related campaigns worldwide focus on female sexual health promotion, with less emphasis on male sexual health, resulting in a lack of SRH campaigns for males (22). Historically, reproductive health has been considered a female's branch of health because pregnancy, childbirth, and raising children were considered entirely the responsibility of women, and the vast majority of SRH programs and interventions were primarily offered for females (23, 24).

The lack of specific campaigns geared toward adolescents in the occupied Palestine and worldwide and the exclusion of youth by decision-makers is worrying (9). This marginalization of adolescents usually results in them not knowing where to seek help if a health problem arises (25). Additionally, the high prevalence of sexually transmitted infections and pregnancies among adolescents, especially in low and middle-income countries (LMICs) (19, 26), emphasizes the need for comprehensive interventions that include both genders in the educational process to address the issue. Furthermore, involving males in SRH interventions is more valuable than targeting females alone, as studies have shown that male engagement in such interventions can raise the use and the continuation of family planning methods, enhance gender equity and relations, and help make informed decisions, thus enhancing overall sexual health (27, 28).

We aim through our both reviews to enhance Palestinian adolescents' situation. The first review includes a detailed investigation of health interventions and research efforts in the occupied Palestine. The primary objective of our study is to identify any possible gaps in these projects, specifically in relation to the topics they address and the method that

they use. This review allows for a more comprehensive understanding of the current health priorities among Palestinian adolescents, thereby aiding in the promotion of equity and improve health outcomes.

In our second review, we aim to go beyond mere identification and contribute to the improvement of Palestinian adolescents' well-being. By addressing a topic that is usually constrained in conservative communities which is SRH particularly for males. However, due to the limited information about SRH especially for males in Palestine and in the region, the review is conducted globally to identify the addressed topics and utilized methods worldwide that can be used in the Palestinian context. Through the findings of this review policymakers will be able to build a program capable of meeting the actual health needs of adolescents. This program will not only bridge existing gaps but also facilitate informed decision-making, ultimately enhancing the overall sexual health of Palestinian adolescent.

Significance and Rationale

Exploring the research and programs carried out in the occupied Palestine identifying the possible gaps, then investigating the various types of sexual and reproductive health campaigns for males around the world, the domains can improve adolescents' health in the occupied Palestine and around the world.

Through our initial review, we identified a gap in sexual reproductive health interventions that specifically target adolescent males in Palestine. Recognizing the importance of addressing SRH needs comprehensively, we decided to conduct a second review. This subsequent study aims to investigate and understand the most effective methods and relevant topics employed worldwide in the context of adolescent male SRH interventions. Our goal is to gain valuable insights and knowledge that can be applied to enhance the overall state of SRH interventions for adolescent males in Palestine, drawing from the global experiences and best practices in this field. By conducting this additional review, we aim to fill the existing gap and contribute to the development of more inclusive and tailored SRH programs that address the unique needs and challenges faced by young males in Palestine, ultimately promoting their well-being and fostering a healthier society.

Also, identifying the methods used in each campaign through both reviews will help national policy-makers develop adolescent health programs tailored to what is most likely successful in our context settings. As policymakers now rely heavily on evidence-based data to make informed decisions.

The knowledge gained from these reviews provides a foundation for developing effective adolescent health programs in the occupied Palestine. By implementing evidence-based

strategies, policymakers can empower and support the well-being of young people, thereby creating a resilient generation that shapes the future of their country.

Research Question and Hypothesis

❖ Research question from the first review:

What are the main topics addressed in the interventions and research geared toward adolescents in the occupied Palestine in the past 12 years?

Sub-research questions from the first review:

- What topics are most commonly addressed in promoting adolescents' health, and which are often excluded?
- What sexual reproductive health (SRH) programs are covered for adolescent males?
- Which age group is the most targeted in adolescents' health research?

❖ Research question from the second review:

What domains are tackled in sexual and reproductive health awareness campaigns for adolescent males?

Sub-research questions from the second review:

- What topics are covered in sexual reproductive health awareness campaigns for adolescent males?
- What are the most successful methods in SRH campaigns that included males?
- What is the difference in methods and topics used in campaigns for males aged 10-14 and males aged 15-19?

- What is the difference in methods and topics of campaigns in high and low-middle-income countries?

❖ Hypothesis

There is a lack in the availability of interventions and research aimed at adolescents in the occupied Palestine due to the low conduction and documentation of those initiatives.

Globally, males are rarely targeted in sexual and reproductive health campaigns.

Objectives

The objectives for the first review are to explore the following about research and interventions:

- The topics addressed in adolescent health research and interventions in the occupied Palestine.
- The methods utilized in adolescent health interventions in the occupied Palestine.
- The age groups targeted in both interventions and research in the occupied Palestine.
- The gender of the participants.
- The funding sources of those interventions and research projects.
- The period in which the studies and interventions took place.

The objectives for the second review are to explore the following about campaigns:

- The main topics covered in SRH campaigns included males.
- The methods applied in SRH campaigns that targeted males.

- The targeted age group in each campaign and the topics and methods used for each age group.
- The country in which the campaigns were conducted.
- The differences between high-income and low-income countries regarding topics discussed, methods used, and targeted age groups.
- The differences between campaigns targeting males only and those targeting males and females.
- The period in which those interventions were conducted.

Chapter II: Methodology

The methodological process of the scoping reviews proposed in this thesis followed the framework proposed by Arksey and O'Malley (29). Scoping reviews facilitate the formulation of a more broad research question and enable a comprehensive examination of the subject significance, employing different methodologies (30). Given the broadness of adolescent health initiatives in the occupied Palestine and the sexual and reproductive health interventions for males globally, topics under study, and the dearth of previous information related to them, a scoping review was considered to be the optimal approach for collecting, synthesizing and analyzing the existing literature on both subjects.

The scoping reviews utilized the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) guidelines (31) as a protocol, provided in Annex 1 and Annex 4. Although no protocol was registered, both reviews used a PRISMA flow chart to illustrate the number of articles identified, included, and excluded and the rationales for exclusions.

For both articles, a comprehensive search of peer-reviewed articles in PubMed, Embase, CINAHL, PsycINFO, Scopus, and Web of Science databases was conducted. No language restrictions were used. The reference lists of included studies in each review were also hand-searched for relevant articles.

However, the grey literature search was only done for the first review, in which a systematic purposive search that was carried out by searching the websites of major organizations involved in adolescent health in the occupied Palestine.

Selection Criteria:

All studies that resulted from the search were imported into Covidence software, a web-based collaboration software platform for producing systematic and other literature reviews (32). Then, the studies' titles and abstracts were screened by two independent reviewers. The resulting studies from the initial screening were then further full-text screened by two independent reviewers. The inclusion and exclusion criteria were identified for each study in the protocol. The two reviewers resolved conflicts; a third reviewer was consulted if a consensus could not be reached.

Two independent reviewers extracted data from the resulting articles using Excel Software (33). The extracted data, mainly topics, and methods, were divided into themes in both reviews. In the first review, topics were divided based on the guidelines of "Adolescent health measurement areas"(34), while the second review's topics were divided according to the comprehensive sexuality education as defined by UNFPA (35). The extracted data underwent an explanatory frequency analysis utilizing SPSS software (36).

Ethical Approval

In accordance with established regulations, no ethical approval is deemed necessary for these studies, as they are reviews and do not involve any study of human or animal subjects.

Chapter III: The Articles

Article One: Adolescent Health Research and Initiatives in the Occupied Palestinian Territory: A Scoping Review.

Adolescent Health Research and Initiatives in the Occupied Palestinian Territory: A Scoping Review.

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Abstract

Problem: Adolescence is a period filled with changes that require special attention, particularly for adolescents living in conflict areas. The scarcity of available information about health research and interventions in the occupied Palestinian territory emphasizes the need for a thorough review of all available data.

Objective: This review aims to comprehensively analyze existing literature and initiatives targeting adolescent health in the occupied Palestine.

Methods: An extensive search using the PRISMA extension for scoping reviews, for both grey-literature search and peer-reviewed articles, through the following databases: PubMed, Embase, Web of Science, Scopus, CINAHL, and PsycINFO.

Inclusion criteria: 1) Research, program, or intervention, 2) Targeting adolescents aged (10 to 19 years), 3) Conducted in the occupied Palestinian territory, 4) Published between 2012 and 2023.

Results: Our search yielded 114 research projects and 19 interventions from peer-reviewed and grey literature searches. The most common topic addressed was noncommunicable diseases, and health awareness was the most common method used in interventions. The targeted group was females and males together, aged 10 to 19, while the least targeted was the younger age group, aged 10 to 14. Most of the studies were funded by international sources and run by foreign and local researchers.

Conclusion: This study sheds light on the current state of adolescent health interventions, identifies research gaps, and promotes evidence-based practices to improve the well-being of Palestinian adolescents.

Implications: Future interventions should include the younger age group, and research should provide accurate information about each age group separately.

Keywords: Adolescent; Research; Intervention; occupied Palestine.

Introduction

Adolescents aged 10 to 19 comprise a significant portion of the world's population (37). Through adolescence, the transitional period from childhood to adulthood, adolescents face various changes that necessitate special attention to their physical, mental, and social needs (38). Many adult diseases and behaviors are rooted in adolescence and preventable if their risk factors are dealt with during this period (39). Therefore, adolescence is considered a golden period for interventions that aim to promote the health of individuals and create a healthy society (40). This can be achieved by conducting research to assess the health needs of adolescents and implementing campaigns that address those unmet needs.

In recent years, low- and middle-income countries have been experiencing a notable increase in the adolescent population (40), with adolescent constituting a significant portion of the Arab population (41). However, this demographic shift has not been met with a corresponding expansion in the availability and diversity of services tailored to meet their health needs. Although there are multiple initiatives in the Arab world to study the health situation of Arab adolescents and a good amount of literature on adolescents from the region, limited work has been made to study adolescent health comprehensively within the region (42).

The Arab region faces numerous challenges, primarily due to the prevalence of conflict situations in several countries (41). One of the main challenges Arab adolescents suffer from is the lack of a trusted source of health information and the obstacles they face in the access for health services, especially in reproductive health and mental health

problems which are also considered sensitive topics in the area doubling the burden on adolescents (15, 43). Another major challenge in the Arab world found in several studies conducted is the lack of research to evaluate adolescents' comprehensive health status and needs (42).

Directing our focus toward the particular circumstances of the occupied Palestine within the wider Arab region. Nearly half of the population in this area is below 18 years old, making adolescents' health status a significant public health issue that needs to be addressed (44).

The diverse living situations that Palestinians face have a significant impact on their health and well-being. These factors include the extended political situation marked by chronic war, significantly impacting the Palestinian population's socioeconomic and health status (12). Wars and conflicts have been shown to devastate a country's infrastructure and negatively impact the mental health of youngsters exposed to war and political violence (45).

Moreover, the dispersion of Palestinians across different regions, such as the West Bank, Gaza Strip, and East Jerusalem, has also led to a notable heterogeneity in their backgrounds. Individuals in these regions face various living conditions due to the population spread among urban centers, distant villages, and refugee camps. This results in people not living in urban centers usually suffering lower access to health services (46, 47).

All of the conditions mentioned above significantly influence the overall health of Palestinians, with a particular emphasis on adolescents, who are usually more vulnerable and more affected by the surrounding situation.

Palestinian adolescents encounter various health challenges as a result of the unique living circumstances they experience. These difficulties include resource constraints, scarcity in research conduct, movement restrictions, and a need for medical infrastructure (48, 49). Addressing these issues is essential to enhance the healthcare system and services offered to adolescents. This process starts with an in-depth understanding of these issues, enabling optimal solutions to be identified.

One of the main issues faced in the Palestinian healthcare system is the scarcity of resources and the inefficiency in resource allocation, which broadly threatens Palestinians' health and the healthcare sector (50). The effect of these constraints can be seen in the health research sector, where the selection of research topics is often influenced by the availability of resources and funding rather than the country's actual needs (12). As a result, critical health issues that require immediate attention and could significantly improve the well-being of adolescents may not receive the attention they deserve.

Another challenge faced in the Palestinian context is the presence of a fragmented health system, which encompasses various entities such as the Ministry of Health, UNRWA, NGOs, and the private sector, presents a significant obstacle to the establishment of a comprehensive health research sector that effectively addresses the actual health requirements of the community (12). It also leads to a fragile health system incapable of

meeting the general population's health needs and the more vulnerable groups such as adolescents (51).

Moreover, the barriers limiting education and healthcare accessibility, especially for adolescents in Gaza, coupled with limited opportunities for adolescents and the presence of a gap in certain services, including sexual and reproductive health services, counseling, and access to information (15), increase the risk factors that adversely affect their overall health and quality of life (49).

Adolescents are a vital component of their communities, and their health can significantly impact the development of their countries, as poor adolescent health can harm the economy and future generations' health (52). Therefore, it is necessary to offer health services, campaigns, and high-quality research that respond to adolescents' unique health requirements. To achieve this objective, it is essential to conduct high-quality health research that evaluates the population's needs and assesses the efficacy of the various interventions conducted in the country, including campaigns, services, and research initiatives. It is also essential to remember that initiatives aimed at this age group may be more complex and require more attention than those aimed at adults and children (53). Consequently, the services offered should always adhere to evidence-based practices to effectively address their needs.

Considerable research is currently being conducted in Palestine, primarily focusing on mental health, nutritional status, and substance use among adolescents (54-56). However, there is a notable absence of studies analyzing the current situation, campaigns targeted at adolescents, and assessing adolescent health in the occupied Palestine.

Bridging this gap is crucial for improving the health of adolescents in the region, as it benefits not only the individuals themselves but also the wider community and future generations. It is also essential to reduce research waste and prevent the duplication of work.

This study aims to assess the initiatives, campaigns, and research being undertaken, in terms of the topics addressed, methods employed, age groups targeted, and responsible parties involved. Such research will provide valuable insights and contribute to developing effective interventions and policies tailored to the specific health needs of Palestinian adolescents.

Methodology

This scoping review's methodological process followed the framework that Arksey and O'Malley proposed (29). Scoping reviews allow for a more general question and a broader exploration of the topic in studies with diverse methodologies (30). Given the broadness of the adolescent health initiatives topic under study, and the dearth of previous information related to it in the occupied Palestine, a scoping review was the optimal approach for collecting, synthesizing, and analyzing the existing literature on the subject.

This scoping review utilized the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) guidelines (31) as a protocol, provided as Annex 1. Although no protocol was registered, the study used a PRISMA flow chart to illustrate the number of identified, included, and excluded and rationales for exclusions.

Search Strategy:

A comprehensive search of peer-reviewed articles in PubMed, Embase, CINAHL, PsycINFO, Scopus, and Web of Science databases was conducted. No language restrictions were used. The reference lists of the screened studies were also hand searched for possibly relevant articles. To identify the available data on adolescent health initiatives in the occupied Palestine, peer-reviewed articles and grey literature were searched from 2012 until March 23rd of 2023. A systematic purposive search of grey literature was carried out by searching the websites of major organizations involved in adolescent health in the occupied Palestine to identify any research or initiatives that would fit the inclusion criteria. The database search used the following keywords: Adolescents OR youth OR teenage AND Health AND Palestine OR Gaza OR “West Bank” OR “East Jerusalem.”

Selection Criteria:

All studies and reports from the search were imported into Covidence software, a web-based collaboration software platform for producing systematic and other literature reviews (32). Two independent reviewers screened the titles and abstracts of all articles to reduce potential bias. The articles obtained from the initial screening were then submitted to a subsequent full-text screening process by two independent reviewers. The resolution of conflicts was achieved through discussion between the two reviewers. In cases where a consensus could not be reached, a third reviewer was consulted.

The inclusion criteria for the studies were: 1) Research, program, or intervention, 2) Targeting adolescents aged (10 to 19 years), 3) Conducted in the occupied Palestine, and 4) Published between 2012 and 2023.

Articles were excluded if they met one of the following criteria: 1) Target population ages >19 or <10 years, 2) Published before 2012, 3) Intervention, program, or research not on the occupied Palestine, and 3) Abstract, book, editorial, or conference proceeding.

Data extraction and analysis

Data was extracted by two independent reviewers using Excel Software (33). For interventions, the following data was extracted: Authors, title, type of document, type of research used, the time this research was conducted, localization (national or subnational), publication year, sample size, study design, age of participants, gender of participants, topics discussed, subtopics, services delivered, who was involved, type of services provided, service delivery location, methods for providing services, funding source, who conducted the research: a local researcher or a foreign researcher, Which organizations commissioned and conducted the research.

For research, the following data was extracted: Authors, title, localization (national or subnational), publication year, sample size, study design, age of participants, gender of participants, topics studied, funding source, who conducted the research: a local researcher or a foreign researcher.

The extracted data underwent an explanatory frequency analysis utilizing SPSS software (36). However, our primary focus was on providing a narrative description of the leading health issues addressed by the initiatives, the methods employed to promote health, the localization of the initiatives, the funding sources, and all other relevant information that

contributes to an accurate representation of the current situation in the occupied Palestine.

Ethical approval

Ethical approval was not necessary.

Results:

Database Search

The initial database search yielded a total of 2930 articles. Subsequently, 1277 articles were duplicates and omitted, leaving 1653 articles for the title and abstract screening. Among these, 1425 articles were identified as irrelevant, while 228 articles progressed to full-text screening. Of the 228 articles, 111 were included for data extraction, while the remaining 117 were excluded. The reference lists of the included articles were hand searched, resulting in 3 articles that met the inclusion criteria. All the included peer-reviewed articles are provided as Annex 2.

The extracted articles were: 1- Ages >19 or <10 years (n= 55). 2-Published before 2012 (n= 4). 3-Intervention conducted outside Palestine (n=19). 4- Abstract, Conference proceeding (n= 28). 5-Not intervention, research, or program (n=10). All the results are explained in (Figure 1: PRISMA flow diagram).

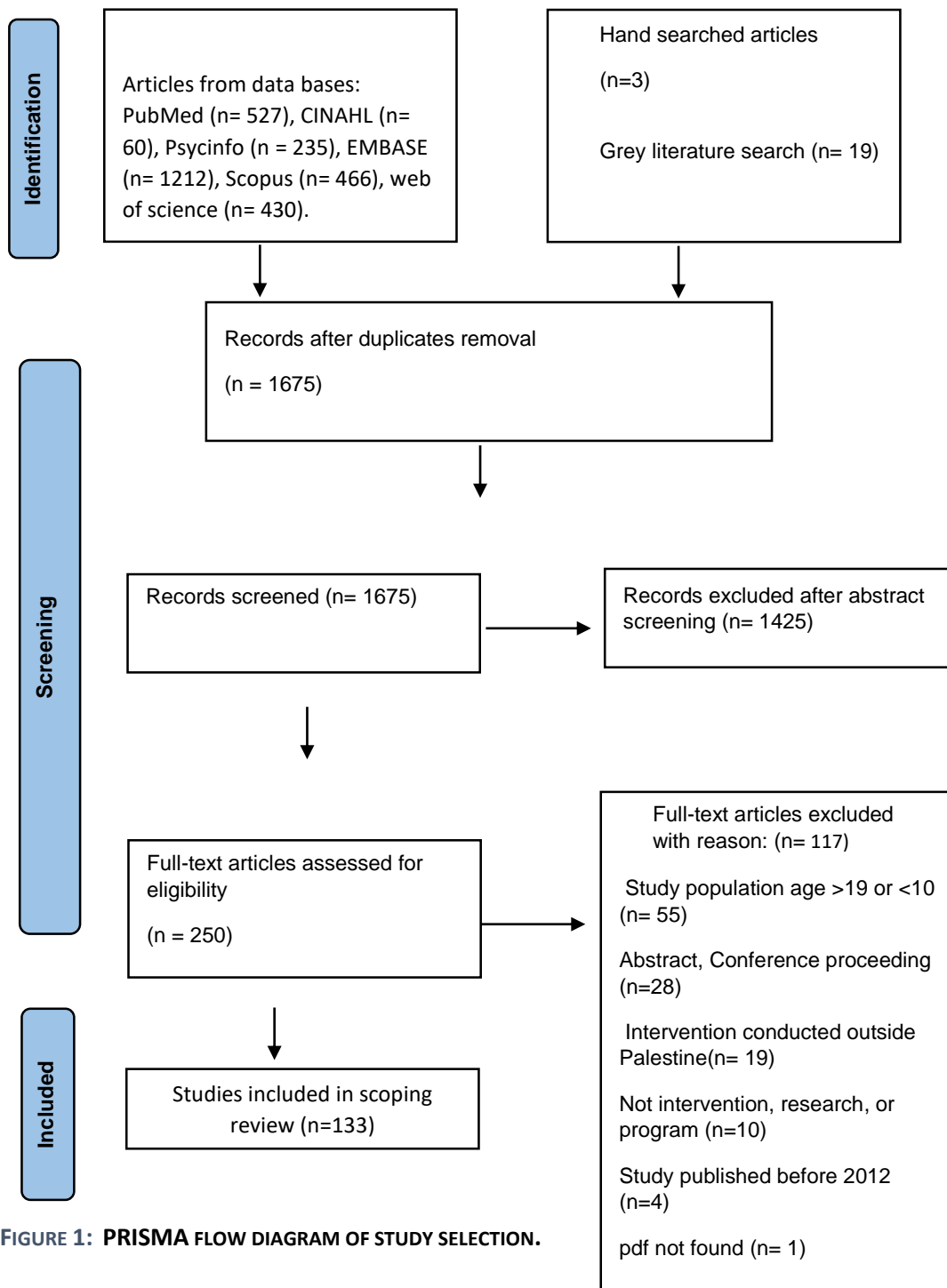


FIGURE 1: PRISMA FLOW DIAGRAM OF STUDY SELECTION.

Grey literature search:

After thoroughly examining websites from organizations focused on adolescent health in Palestine, 19 articles were identified that met the specified inclusion criteria. This selection process initially screened the executive summaries or abstracts, followed by a subsequent screening of the full-text articles.

Data analysis

All the extracted data was analyzed based on being an intervention or observational research. An intervention study includes all experimental research, whether published in peer-reviewed articles or documented in grey literature reports. These studies involve the implementation of an intervention or the provision of a service as an essential element of a program. While an observational study refers to studies that includes data collection and analysis that have been done without the provision of interventions or services from the researchers.

Adolescent observational health research in Palestine**Characteristics**

Of the 133 included studies, 114 were classified as health research and 19 as interventions. Of health research focused on Palestinian adolescents 35% of the studies were conducted during the period spanning from 2012 to 2015. A lower proportion of research, 32.5% was conducted from 2016 to 2019, and the same number of studies were conducted between 2020 and 2023.

Regarding the localization of health research, studies were carried out at either a sub-national level, either in Gaza or the West Bank individually or at a national level

encompassing both Gaza and the West Bank. Only 21.9% of the research was conducted nationally, while the remaining portion, (78.1%) was carried out either in Gaza or the West Bank.

Demographics of the target groups

The health research conducted in Palestine focused on three distinct age groups: group 1, encompassing individuals aged 10 to 14 years, group 2, consisting of those aged 15 to 19 years., and group 3, comprising individuals from 10 to 19 years. Most research studies, 64.9% focused on group 3, aged 10 to 19. A smaller proportion, consisting of 19.3% of the studies targeted group 1, aged 10 to 14, while the remaining portion (15.8%) was for group 2, aged 15 to 19. In terms of the gender makeup of the target groups, the majority which consist of 93%, targeted both males and females, with a smaller proportion 4.4% specifically targeting females and an even smaller proportion 2.6% specifically targeting males.

Main topics covered

Identifying topics and subtopics covered in studies and interventions conducted in Palestine was based on the guidelines of "Adolescent health measurement areas"(34). Most studies covered a range of health domains, with each primary subject comprising multiple subtopics.

The main topics discussed was noncommunicable diseases, accounting for 29% Of the topics, it consisted of 5.2% depressive disorders and 9.7% PTSD, 4.5% anxiety disorders, 3.6% stress/pressure, 2.4% Self-harm, 2.4% Oral conditions and 0.4% Eye diseases and disorders. The second main topic covered was Health behaviors and risks, which was

discussed in 25.5% of the studies. It includes 8.9% dietary behavior, 6.5% tobacco use, 4.1% physical activity, 3.7% weight status, 3.2% substance use, 2.8% alcohol use, 2.4% sexual health, 1.6% bullying, 0.8% menstruation, 0.4% sedentary behavior and 0.4% sleep.

As for the third main topic, Injuries were covered in 18.2% of the studies, and it contained Interpersonal violence in 12.6% of the studies as it's the only covered subtopic. It was followed by subjective well-being main topic that was discussed in 10.2% of the studies; it includes 7% Affect/feeling/emotion, 2.4% social connectedness, and 0.4% life satisfaction.

The fifth main topic was Social, cultural, economic, educational, and environmental determinants of health it was part of 8% of the studies, and it consists of the following subtopics: 2% education level/schooling status, 1.6% being part of a vulnerable group, 1.2% income level and poverty, 0.8% WASH (safe water source/sanitation, access to the handwashing facility), 0.8% gender, 0.4% child labor and 0.4% child marriage.

Communicable, maternal, perinatal, and nutritional conditions were the sixth covered topic in 6.3% of the studies, it includes COVID-19 and Iron-deficiency covered in 3.2% and 1.2% of the studies, respectively. The least discussed topic was Systems performance and interventions in 2.8% of the studies. It covered 1.2% Health service availability and access, 0.8% Health service utilization and barriers, and 0.4% health education.

Who conducted the research?

Studies in the occupied Palestine were either carried out by local, foreign, or a mixture of both researchers. The majority of the studies consisting of 56.1% were undertaken by both local and foreign researchers. 25.5% were executed by local researchers only. While only 14.9% were conducted by foreign researchers, and the remaining 3.5% were grey literature studies that didn't mention the names of the researchers who did the research.

Funding source

International sources mainly funded the adolescents' research in the occupied Palestine, 32.5% of the studies were funded by international sources, and 8.8% were regionally funded. 41.2% of the studies didn't mention the source of funding, and 17.5% declared that they didn't receive any funding. Characteristics and demographics are clarified in *Table 1*.

TABLE 1: CHARACTERISTICS AND DEMOGRAPHICS (N= 114)

	Number (%)
Publication year	
2012-2015	40 (35%)
2016-2019	37 (32.5%)
2020-2023	37 (32.5%)
Age groups	
10- 19	74 (64.9%)

10- 14	22 (19.3%)
15- 19	18 (15.8%)
Target population	
Males and females	106 (93%)
Females only	5 (4.4%)
Males only	3 (2.6%)
Who conducted the research	
Local researcher only	29 (25.5%)
Foreign researcher only	17 (14.9%)
Both	64 (56.1%)
Not mentioned	4 (3.5%)
Funding source	
International	37 (32.5%)
Regional	10 (8.8%)
Not mentioned	47 (41.2%)
No funding	20 (17.5%)
Main topics (more than one topic was addressed)	
Noncommunicable diseases, including mental health	51(29%)
Health behaviors and risks	45 (25.5%)
Injuries	32 (18.2%)
Subjective well-being	18 (10.2%)

Social, cultural, economic, educational, and environmental determinants of health	14 (8%)
Communicable, maternal, perinatal, and nutritional conditions	11 (6.3%)
Systems performance and interventions	5 (2.8%)

Adolescent Interventions in Palestine

Characteristics and demographics

Nineteen health interventions for adolescents were identified in Palestine. Most of those interventions, 10 of them were conducted before 2015 between 2012 and 2015. In the following years, between 2016 and 2019 only 4 interventions were conducted. As for the recent 2020 to 2023, 5 interventions took place.

Those health interventions were conducted mainly at the sub-national level, as 17 interventions were conducted in Gaza or the West Bank. The remaining 2 were conducted at the national level. Most interventions, (n= 18), targeted males and females, while only 1 targeted females alone. The primary age groups these interventions aimed at are the age group from 10 to 14 and the age group from 10 to 19 years; they were equally addressed in 16 studies, 8 studies each. As for the age group, 15 to 19 years was targeted in 3 studies.

Main topics covered

Many of the interventions discussed more than one topic, of which the main topic was noncommunicable diseases in 9 of the interventions. It focused on PTSD, depressive

disorders, and anxiety disorders. Health behaviors and risks was the second covered topic in 6 interventions, which discussed dietary behavior in of the interventions, sexual health and tobacco use. It was followed by subjective well-being in 5 interventions, which covers affect/feeling/emotion, social connectedness, and life satisfaction.

The least covered topics were social, cultural, economic, educational, and environmental determinants of health, Communicable, maternal, perinatal, and nutritional conditions, and Injuries, which discussed WASH, Iron-deficiency and gender-based violence, respectively. Each main topic was covered in one intervention.

As for the topics covered for the younger age group (10 to 14) in the occupied Palestine, the following topics were addressed, noncommunicable diseases in 26.3% of the interventions, subjective well-being in 21% and health behaviors and risks in 5.2% of the interventions. It should be taken into consideration that each intervention addresses multiple topics. The main topics addressed in both interventions and observational research are shown in Figure 2.

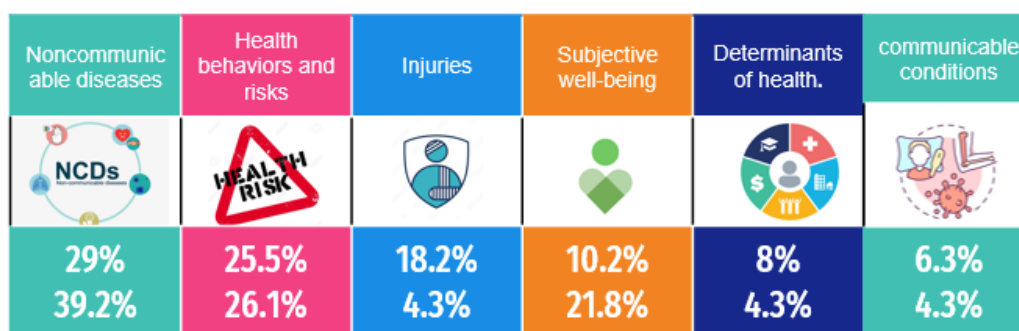


Figure 2. Main topics addressed in health observational research and interventions for adolescents in Palestine.

Methods used in health interventions

Each intervention provided at least one method for health promotion. These methods include health awareness provided in 16 interventions. It includes lectures, brochures, booklets, and all services that promote health awareness. The second method utilized was interactive activities which was utilized in 12 interventions. It includes games, written exercises, and drama. As for the third method, 3 interventions provided services for enabling the adolescents' environment by providing the needed services and rehabilitation of the old ones. As for the least used methods, therapeutic and counseling services were utilized in 2 interventions, and food fortification, including salt iodization, was used in one study. The characteristics and demographics of the interventions are provided in Table 2.

TABLE 2: INTERVENTIONS CHARACTERISTICS AND DEMOGRAPHICS (N=19)

	Number (%)
Publication year	
2012-2015	10 (52.7%)
2016-2019	4 (21%)
2020-2023	5 (26.3%)
Age groups	
(10- 19)	8 (42.1%)
(10- 14)	8 (42.1%)
(15- 19)	3 (15.8%)
Target population	

Males and females	18 (94.7%)
Females only	1 (5.3%)
Males only	0 (0%)
Who conducted the intervention	
Local researcher	5 (26.3%)
Foreign researcher	1 (5.3%)
Both	10 (52.6%)
Not mentioned	3 (15.8%)
Funding source	
International	9 (47.4%)
Regional	1(5.3%)
Not mentioned	7 (36.8%)
No funding	2(10.5%)
Main topics (more than one topic was addressed)	
Noncommunicable diseases, including mental health	9 (39.2%)
Health behaviors and risks	6 (26.1%)
Injuries	1 (4.3%)
Subjective well-being	5 (21.8%)
Social, cultural, economic, educational, and environmental determinants of health	1 (4.3%)
Communicable, maternal, perinatal, and nutritional conditions	1 (4.3%)
Methods utilized (more than one method was used)	
Health awareness	16 (47%)

Interactive activities	12 (35.2%)
Enabling environment	3 (8.8%)
Counseling and Therapeutic services	2 (6%)
Food fortification	1 (3%)

Regarding interventions that utilized education, all topics were addressed using this method, taking into consideration that multiple topics are discussed in each intervention. The following topics were discussed: noncommunicable diseases were discussed in 36.8% of the interventions, health behaviors, and risks topic in 31.5%; subjective well-being in 26.3%; and Communicable, maternal, perinatal, and nutritional conditions, Injuries, and Social, cultural, economic, educational, and environmental determinants of health were discussed in 5.2% of the interventions each. Methods utilized in health interventions for adolescents in Palestine are provided in Figure 3.

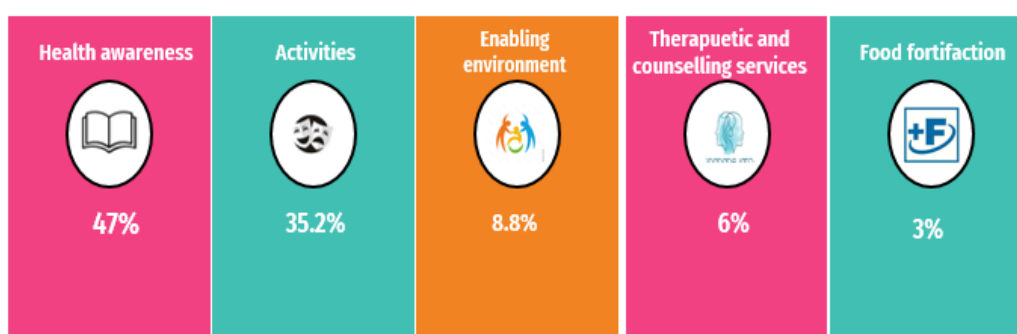


Figure 3. Methods utilized in health interventions for adolescents in Palestine.

Who conducted the interventions?

Interventions were conducted by local researchers, foreign researchers, or a group of local and foreign researchers. More than half of the interventions, (52.6%), were conducted by a group of both researchers. 26.3% were carried out by local researchers, while only 5.3% were led by foreign researchers. Some of the interventions 15.3% in the grey literature didn't mention the names of the researchers who conducted them.

Funding source

The primary funding source of the interventions was international, 47.4% were funded from international sources, and 5.3% were regionally funded. The funding source for the rest of the studies was either not mentioned 36.8%, while the remaining interventions 10.5% declared that they didn't receive any funding.

The main topics addressed in the studies that declared they hadn't received any funding were noncommunicable diseases, health behaviors and risks, and communicable, maternal, perinatal, and nutritional conditions 5.2% each.

Ethical consideration

All interventions aimed at the younger age group (10 to 14) obtained consent in different ways. 15.7% of the studies obtained signed consent from the guardian, 10.5% obtained consent from both students and their parents, (10.5%) of the interventions obtained the permission of school authorities, and only 5.2% obtained verbal consent from the parents. Detailed information for all age groups is provided in Annex 3.

Sexual and reproductive health (SRH) topics addressed in research and interventions

In research conducted in the occupied Palestine, 6.1% of the studies discussed SRH in terms of patterns, perceptions among Palestinians, engagement in sexual activity, factors increasing vulnerability to engagement, access to SRH information, and the prevalence of sexual behaviors. This topic was targeted mainly at the older age group (15 to 19), as they were targeted in 5.3% of the studies and only 0.8% were aimed at the age group (10 to 19) years, and none targeted the younger age group (10 to 14).

As for the interventions, only one intervention, (5.2%), addressed this topic, and it discussed SRH rights. It utilized activities and education to cover this topic and aimed at the older age group (15 to 19).

Discussion:

This review studied the health interventions and research conducted for adolescents aged 10 to 19 in the occupied Palestine. It describes the main topics addressed, the target groups, the age groups, the funding sources, and the localities of the researchers who carried out the research and the interventions. It also elaborates the most common methods to deliver the intended information in those interventions.

The number of studies conducted for adolescents was significantly greater than the number of interventions, indicating that the research efforts for adolescents in the occupied Palestine and Arab countries, in general, are noteworthy (42). Whereas there is an apparent lack of interventions geared toward adolescents and a need for more efforts to develop this sector, as revealed in our study and other studies conducted in the Arab region (57).

The age group targeted by research and interventions was primarily those aged 10 to 19, which is more advantageous because a more significant number of adolescents can benefit when a broader age group is targeted. This was also perceived in several reviews of studies and interventions conducted in the occupied Palestine (58-60). As for the older age group (15 to 19) was the main target group for SRH studies and interventions; this could be attributed to the social norms and the conservative nature of Palestinian society, making it harder to target and engage the younger age group (17).

Most of the Palestinian health research and interventions targeted females and males together; only a few studies targeted males only; however, they were not targeted in any of the interventions. This could be attributed to several reasons, including the lack of resources in the occupied Palestine (61), which makes it necessary for stakeholders to benefit as much as possible from the available resources by targeting both sexes. Furthermore, the low attention directed toward males may be attributed to the sensitivity surrounding specific topics, such as SRH, particularly for males. These individuals face additional barriers to participation, including the stigma associated with such topics and a lack of awareness regarding the importance of participating in health interventions, making their inclusion much more complicated (62).

Although targeting males and females together could be considered as a strength, as it reaches more target audience. However, gender-specific interventions are needed, especially in some sensitive topics interventions to address the unique needs of each gender, thereby promoting their active engagement and meeting their specific needs. Furthermore, contextualizing the methods and the tools used in the interventions can be

an effective way to improve the outcomes of the interventions, meet the needs of the target population and make them more beneficial for the participating youth.

Furthermore, it was notable that the funding sources were primarily international. The majority of the studies and interventions were conducted in the presence of a foreign researcher, indicating that there could be an international influence on the conducted studies, which may affect the type of topics being addressed, making it donor-driven, as donors are seen to impose their agendas in health research, rather than addressing the specific needs of Palestinian adolescents (63). Also, at the time these studies were conducted, no priority list for adolescent health or research was available in the occupied Palestine (14). This raises the question of who decides what is important to the country and how the research topics and priorities are determined.

Regarding the main topics that were discussed, our review identified the noncommunicable diseases topic as the most addressed, which included mainly mental health topics and PTSD; this could be attributed to the unique context of the occupied Palestine as it is a conflict area, where people are constantly exposed to wars and political violence, whether in Gaza or the West Bank, affecting the mental health of Palestinians, thus making it an appropriate area for research (64). Nonetheless, this context has given rise to additional significant issues that remain neglected, such as disabilities and injuries resulting from war. These concerns impose a substantial burden, yet they have not received the appropriate attention they deserve. It is imperative to allocate more resources toward research and rehabilitation interventions to address these issues effectively (50).

As for the methods used in the interventions, more than one method in each intervention was used. Of those methods, the most common was health awareness. Most of the interventions used health awareness methods to raise awareness about the topic being addressed besides other types of methods; this could be attributed to the perceived effectiveness of such methods in raising awareness, enhancing health outcomes, and improving the help-seeking behavior in several health topics as found in many studies worldwide (65, 66). However, it needed to be specified whether the trainers who delivered the awareness sessions underwent training themselves or were adequately equipped to engage with adolescents at this critical stage. Additionally, there needs to be a mention of whether the effectiveness of these interventions was evaluated upon completion. Addressing this aspect could enhance the quality of future interventions and offer insights for designing programs tailored to the specific needs of this age group (67).

However, many methods were found to be effective in the literature globally that haven't been used in any Palestinian intervention for youth. One of these methods is peer-led interventions. It was found that interventions utilizing this method effectively prevented unwanted health behaviors, increased knowledge, changed beliefs about certain health topics, and are more acceptable among youth (68, 69). Additionally, more developed methods could be utilized in the interventions geared toward adolescents, as these interventions could be more engaging for youth, especially males who were found in our study to be marginalized in health interventions. Also, the effectiveness of such methods in enhancing health and mitigating the negative impact of some health problems was found in some studies, making it an appropriate choice for future interventions (70, 71).

In light of the results found in this study, and regarding the targeted age group, it would be of great benefit that each age group (10 to 14) and (15 to 19) would be more included separately in the interventions and studies, as they were found to be neglected. This could provide a more age-specific data about each group allowing for a better identification of their actual health needs. Moreover, when targeting the whole age group (10 to 19) years old, segregated data on each group should be provided so that researchers can study each group's needs, existing interventions, and the gaps in the provided services and research.

Furthermore, it is crucial to conduct research to evaluate the precise requirements of Palestinian adolescents. This assessment will help identify the particular areas that require additional investigation and targeted interventions. It is essential to build a well-defined strategy based on a pre-established list of health priorities to address adolescents' unique needs effectively. Implementing such an approach will ensure the precise and efficient handling of these matters, minimizing the potential for research waste and ultimately promoting the overall well-being of adolescents.

At last, researchers from the local community must be encouraged to participate more effectively in adolescent research to obtain valuable insights related to the distinct challenges and opportunities specific to Palestinian adolescents. This will aid in the creation of customized interventions for the promotion of their health and well-being.

Strength and limitations: This scoping review provides a comprehensive overview of health research and interventions conducted in the occupied Palestine. It includes data from peer-reviewed articles and grey literature from 2012 to 2023. It covers all types of studies, including interventions and systematic reviews. To the authors' knowledge, this

review was the first review to tackle this issue in the occupied Palestine. However, our study was limited by the need for a quality assessment tool for studies included in scoping reviews. Also, many studies related to the topic were found as abstracts for conferences and were not published, given the economic status of Palestine, further limiting the available data.

Moreover, A significant limitation in this study is the limited accessibility of information, as numerous Palestinian organizations and non-governmental organizations (NGOs) avoid sharing their data and making it publicly available. Moreover, a considerable number of organizations fail to adequately document their activities, resulting in a scarcity of data regarding the specific initiatives undertaken in the field of adolescent health.

Conclusion:

This scoping review provides an overview of adolescent health interventions and research in the occupied Palestine, highlighting strengths and improvement areas. While several studies have been conducted for Palestinian adolescents, a notable need for interventions tailored to their needs is evident. By targeting a broader age group and focusing on both males and females, interventions can significantly impact the overall well-being of Palestinian youth. It is crucial to involve local researchers to gain deeper insights into Palestinian adolescents' unique challenges and opportunities, enabling the development of contextually relevant and effective interventions.

Ethical consideration: not applicable.

Declaration of Competing Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Article Two: Sexual and reproductive health interventions geared towards adolescent males: A scoping review.

The manuscript was submitted to “The Journal of Pediatric Nursing” on 27 February 2023 and Published on 5 July 2023.

The published manuscript is provided in Annex 4.

Sexual and reproductive health interventions geared towards adolescent males: A scoping review.

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Highlights

- Sexual reproductive health interventions that are exclusive to males are scarce worldwide.
- Including men in sexual health promotion initiatives can improve outcomes.
- Most male-targeted sexual health interventions highlight the family planning domain.
- The most common approach in interventions for sexual and reproductive health that target males is interactive techniques.

Abstract:

Problem: Male adolescent sexual and reproductive health (SRH) interventions are rare worldwide. The high prevalence of sexually transmitted infections and pregnancies among female and male adolescents worldwide highlights the need for comprehensive interventions that include both genders in the educational process.

Objective: Our main focus is studying and analysing male-focused SRH interventions globally to include males in evidence-based interventions that improve the SRH of adolescent males.

Eligibility criteria: This Review was conducted using the PRISMA extension for scoping reviews. The following databases were searched: PubMed, Embase, Web of Science, Scopus, CINAHL, and PsycINFO. Inclusion criteria: 1) No time or date limits; 2) all types of studies; 3) SRH campaign; 4) males; 5) 10 to 19 years.

Sample: five thousand and sixty-eight articles were identified, and 166 peer-reviewed articles met the inclusion criteria.

Results: The key techniques and domains addressed by SRH programs include family planning as the primary domain covered for adolescents. Interactive activities was identified as the most common method used to deliver information to adolescents about sexual health. SRH interventions for males were most prevalent in the region of the Americas, particularly in the United States. While in the Eastern Mediterranean region, no male interventions were found in our review.

Conclusion: This scoping review emphasizes the need to include adolescent males in sexual and reproductive health interventions, particularly in low- and middle-income

countries (LMICs) and the Eastern Mediterranean Region (EMR). Policymakers should develop comprehensive programs that address male-specific needs, improve training for intervention providers, and enhance reporting processes to identify gaps and barriers to male inclusion.

Implication: This review recommends that future research to be directed toward the obstacles that prevent SRH interventions targeting males from being carried out.

Keywords: Sexual reproductive health, Campaign, Program, Intervention, Adolescent, Male.

Introduction:

Sexual and reproductive health (SRH) services are considered fundamental for everyone (72). Adolescents aged 10 to 19 years, comprising 16% of the population worldwide, with 1.3 billion adolescents (73), suffer unmet sexual health needs, particularly unmarried sexually active adolescents. In addition, they face different barriers to accessing their sexual health needs, which include a lack of knowledge, the ability to access healthcare services, and doubting the confidentiality of sexual healthcare providers (74).

Significant developmental changes occur on various levels during adolescence, including both physical and psychological changes. During puberty, curiosity in topics related to sex among adolescents and learning about healthy sexual habits and sexual needs, such as where to seek help and treatment for sexual problems, begin to rise; it is also during this time that adolescents develop self-awareness and develop distinct identities. As adolescence is considered a good time for intervention (75), it is critical to invest in this critical period to promote the right attitudes and social and behavioral skills. There is a global consensus that improving and protecting adolescent health will benefit adolescents' health in the future and will last for subsequent generations (74).

The increasing number of sexually active adolescents cannot be overlooked; this increase can have serious consequences, including the spread of sexually transmitted infections and the high number of early pregnancies (75). High adolescent pregnancy rates and the spread of sexually transmitted infections are two major problems that low-middle-income (LMICs) settings suffer from (76, 77). Moreover, adolescents' access to sexual health education and intervention is weak; due to poor SRH knowledge among adolescents and the stigma associated with using sexual health services for unmarried

youth, especially in conservative communities (78). Many policymakers are cautious about those campaigns and are usually afraid that such campaigns may lead to increased sexual activity and several unwanted consequences. Thus they try to limit their spread and effectiveness, which creates a gap between the services provided and the actual needs of adolescents, and failure to reach their optimum goals (79-81). This indicates the urgent need of those conservative communities for SRH improvements, such as secure access to accurate information and practical, safe, and affordable contraception should be provided so that adolescents are empowered and well-informed and can make the right SRH choices (79).

Efforts to improve sexual and reproductive health should be directed equally to females and males. Historically, reproductive health has been considered a female's branch of health, and the vast majority of sexual and reproductive programs and interventions, and even family planning services, were exclusively provided for females (24). Involving males in sexual reproductive health interventions is more valuable than targeting females alone, as studies have shown that male engagement in such interventions can raise the use and the continuation of family planning methods, enhance gender equity and relations, and help making informed decisions, thus enhancing overall sexual health (82-84).

Due to the significant positive effects of involving males on sexual health in general, it is crucial to run SRH programs that welcome males and provide them with SRH services tailored to their needs. The objective of this review is to inform about the various types of sexual and reproductive health campaigns for males around the world, the domains

covered, and the methods used in each campaign in order to find the most effective campaign in raising adolescent males' awareness about sexual and reproductive health.

Methodology:

The Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) guidelines was used as a protocol for this scoping review (31), provided as Annex 5. It was carried out in five phases: (1) identifying the research question using the PICO strategy, (2) conducting the search to identify the relevant studies, (3) including the relevant studies based on the inclusion criteria, (4) charting the data and interpreting it, and (5) summarizing and narrating the results as our research question was broad and hoped to identify gaps in evidence geared towards the types of sexual reproductive health interventions geared toward adolescent males globally available, a scoping review was found to be the most suitable (85). No protocol was registered, but a PRISMA flow chart was used to display the number of articles identified, included, and excluded and the reasons for exclusions.

Search Strategy:

To identify published data on SRH interventions for adolescent males, a comprehensive literature search was conducted from inception until April 26th, 2022. PubMed, Embase, CINAHL, PsycINFO, Scopus, and Web of Science were the electronic databases used. No language or year limitations were used. All screened studies selected for analysis reference lists were hand searched for relevant articles.

The search strategy included the following key terms: Sexual reproductive health AND Sexual violence OR sexual harassment OR Premarital sex OR unsafe sex OR Pregnancy OR

Sexually transmitted infections OR STIs OR AIDs OR HIV OR HIV testing OR HIV infection OR HIV knowledge OR Condom OR contracept* OR abstinence OR LGBTQ OR lesbian OR Gay OR bisexual OR transgender OR questioning OR Puberty OR fertility OR Sexual rights OR Awareness OR Literacy OR counseling OR education) AND (Campaign OR Program OR intervention) AND (Adolescent OR Teen*) AND (Boy OR male*).

Inclusion and exclusion criteria:

Articles were included if they met the following criteria: (1) all types of studies, (2) involved adolescents 10 to 19 years old, (3) was a sexual reproductive health campaign, (4) for males. Our search strategy was not limited by study design, language, or year. Articles were excluded if: (1) not SRH campaign, (2) ages 0-9, 20+, (3) not male-oriented, (4) poster, conference abstract, or book only.

Selecting studies and collecting data:

In order to reduce the risk of reviewer bias, two reviewers independently screened the titles and abstracts for all articles. Conflicts were resolved by discussion between the two reviewers. A third reviewer was consulted when consensus was not reached. The full-text screening was also done by two independent reviewers; the consensus was reached either by discussions between the two authors or by a third reviewer consultation. Search results were imported on COVIDENCE software (32), a web-based collaboration software platform that streamlines the production of systematic and other literature reviews. Screening and decisions were recorded using the same software.

Data were extracted by two independent reviewers and recorded using Excel (33). The following data was extracted: Author's name, title, publication year, journal name,

country, study design sample size, age, target population, setting of the campaign type of the campaign, the domain of the intervention, subtopics, campaign's duration, campaign's description campaign's methods, the outcome of the campaign, assessment of the campaign, challenges facing the campaign, limitations. Missing data was recorded as 'not available.' In cases of discrepancies, the consensus was reached by consulting a third reviewer.

Topics covered in each campaign were divided in accordance with the comprehensive sexuality education programs implemented by the United Nations Population Fund UNFPA, which included the following key concepts: SRH, sexuality and sexual behaviour, the human body and development, skills for health, violence and staying safe, understanding gender, "values, rights, and sexuality, relationships (35). The premise of these initiatives is that young people should have access to information that will allow them to make informed choices regarding their sexual health. Narrative synthesis and an explanatory frequency analysis was performed on the extracted data using SPSS software (36).

Results:

The database search resulted in 6355 articles, from which 1375 duplicates were removed. Hand search resulted in 137 articles, from which 49 duplicates were removed. A total of 5068 articles were screened. In the first stage of screening -Title and abstract screening- 4302 studies were excluded; 715 studies were assessed for full-text eligibility by two reviewers using the following exclusion criteria; not campaign, intervention, program (n=316), ages 0-9, 20 + (n=110), posters, abstracts, books (n=66), Age group not specified (n= 26), full text not found (n=19), campaign exclusively for females (n=8) and not sexual

reproductive health-related (n=4), resulting in 549 articles that were excluded. All of these results can be found in (Figure 1: PRISMA flow diagram).

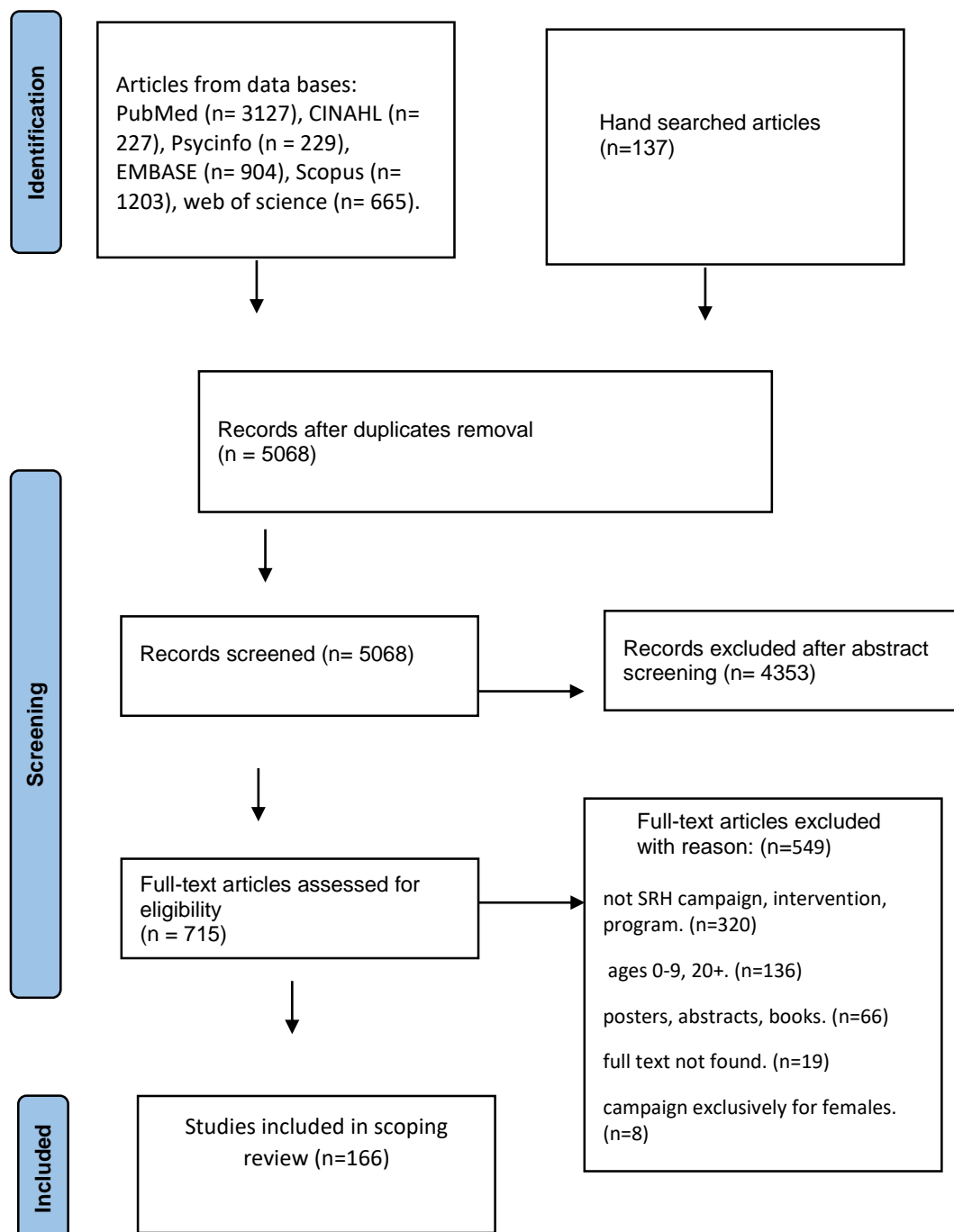


Figure 1. PRISMA flow diagram of study selection.

A total of 166 articles were eligible for extraction; most of those studies used a quasi-experimental design, which used pre and post-tests to evaluate the effectiveness and the success of the interventions used in the campaigns.

Characteristics of included studies:

Characteristics of the included studies are shown in Table 1. Thirty-five percent of the studies were published between 2013 and 2018. Most were conducted in the region of the Americas (AMR) (47%), as defined by the World Health Organization (WHO) region's division. In contrast to the Eastern Mediterranean Region (EMR), where no studies met our inclusion criteria. Additionally, half of the studies took place in high-income countries (51.2%), and only a few studies were conducted in low-income countries (6%). More specifically, the United States of America (USA) accounted for (36.7%) of the 166 studies, which is the largest number of studies from one country. Overall, only 4.8% of studies were exclusively tailored to males. The rest were for both males and females together. As for the targeted age groups, the population included individuals aged between 10 to 19. Only (12.7%) of the campaigns targeted the younger age group (10-14) exclusively, (32.5%) were geared toward the older age group (15-19) years old, and (42.8%) of the studies were geared toward (10-19) years old together.

Table 1: Characteristics (n= 166)

	Number (%)
Publication year	
1980- 1999	18 (10.8%)

2000- 2007	27 (16.3%)
2008- 2012	38 (22.95)
2013- 2018	59 (35.5%)
2019- 2022	24 (14.5%)
WHO regions	
Region of the Americas	78 (47%)
African Region	35 (21.1%)
Western Pacific Region	19 (11.4%)
European Region	18 (10.8%)
South-East Asian Region	16 (9.6%)
Age groups	
10- 19	71 (42.8%)
10- 14	21 (12.7%)
15- 19	54 (32.5%)
Target population	
Males and females	157 (95.2%)
Males	8 (4.8%)
Main Domain	
Family planning	146(87.9%)
Sexual Health	52 (31.3%)
Life-skills	48 (28.8%)
Gender identity and rights	42 (25.3%)
Substance use	12 (7.4%)

Methods Used in Campaign/Intervention	
Interactive activities	102 (61.4%)
Lectures	59 (35.6%)
Audio and visual aids	48 (28.9%)
Peer education	26 (15.6%)
Mass methods	22 (13.2%)
Health services promotion	3 (1.8%)
Health services	2 (1.2%)

Domains covered in SRH campaigns/programs:

The domains covered in the campaigns were defined according to the comprehensive sexuality education as defined by UNFPA(35). Most studies covered different domains, and for each domain, several subtopics were identified. 41.5% of the articles addressed only one domain, 36.7% discussed two domains, 19.8% discussed three domains, and 1.8% discussed four domains in their interventions. Subtopics are identified in Table 2. More than three-quarters (87.9%) of the studies had family planning domain, which discussed condom use specifically, contraception in general, safe sex practices, premarital screening awareness, safe motherhood and parent-hood, knowledge of clinic services, and availability of male reproductive health services. The most covered subtopics in this domain were birth-control methods (64.4%) and sexually transmitted infections (62.1%). Family planning was the most covered domain for smaller age groups (10-14 years) and both age groups (10-19 years) in all countries.

Table 2. Subtopics covered in sexual reproductive health campaigns. (n=166)

Topics and Subtopics	Number (%)
Family planning	146 (87.9%)
Birth-control methods	107 (64.4%)
STIs	103 (62.1%)
Pregnancy	18 (10.8%)
Health services	9 (5.4%)
Sexual Health	52 (31.3%)
Anatomy and physiology	39 (23.5%)
General knowledge	12 (7.2%)
Life-skills	48 (28.8%)
Social skills	29 (17.5%)
Negotiation skills	12 (7.2%)
Adolescent-parent communication	9 (5.4%)
Leadership skills	4 (2.4%)
Goal setting	1 (.6%)
Economic skills	1 (.6%)
Gender-identity and rights	42 (25.3%)
Identity	22 (13.2%)
Violence	12 (7.2%)
Rights	11 (6.6%)
Stigma	5 (3%)
Values	2 (1.2%)
Sexuality	2 (1.2%)
LGBT-specific education	1 (.6%)

Sexual health was the second domain identified in (31.3%) of the studies and the most highlighted domain for the younger age group. It involved the anatomy and physiology of adolescents, which was covered in (23.5%) of the articles, and general knowledge of health in (7.2%) of them. Sexual health subtopics discussed reproduction, reproductive physiology, reproductive system anatomy, adolescent health, and puberty changes.

Life-skills was also an important domain of education for adolescents in (28.8 %) of the campaigns. It consisted mainly of social skills (17.5%), negotiation skills (7.2%), adolescent-parent communication (5.4%), leadership skills (2.4%), and both economic skills and goal setting (.6%). In this domain, several subtopics were taken into consideration, such as adolescent self-esteem, life goals, life responsibilities, developing healthy relationships, and decision-making. In addition, negotiation skills included refusal skills, negotiating condom use, refusing unprotected sex, and maintaining decisions.

The broadest domain, gender identity, and rights, was covered in (25.3%) of the articles. It discussed identity, positive body image, and gender roles. (13.2%) of the articles covered the topic of identity, which highlighted self-awareness, gender identification, and sex roles. Violence was covered in (7.2%) of the articles which discussed sexual violence and sexual abuse. Human rights were explained in (6.6%) of the articles. Human rights included gender equity, sexual and reproductive rights, and how to protect personal rights. Another subtopic under this domain was stigma, which discussed the taboos and the disgrace people suffer if diagnosed with STIs, specifically HIV in some cultures. Furthermore, values and sexuality were covered in (1.2%) of the articles each. LGBT-specific education was the least covered domain and was discussed only in one article, where a campaign was held in the USA targeting older age groups of males and

females together. Finally, only a few studies (7.4%) concentrated on substance use - alcohol and smoking- awareness. The main domains addressed in SRH interventions are shown in Figure 2.

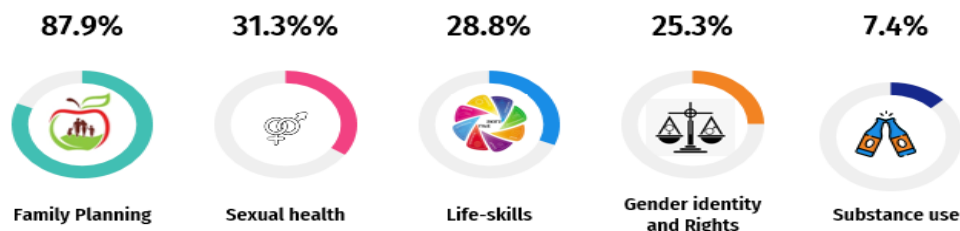


Figure 2. Main domains addressed in SRH interventions for males globally.

Methods employed in SRH campaigns/programs:

A single campaign could use different methods to deliver the campaign's message. More than half (61.7%) of the methods used were interactive techniques that included discussions, games, stories, role-playing, simulation, demonstration, homework, and individual counseling. Interactive techniques were the most frequently used method in campaigns in all countries, especially for older age groups (15-19 years). Lecturing was also an important method employed (37.6%). It was the primary method used in teaching the younger age group of adolescents (10-14 years). Furthermore, 28.9% used audio and visual aids, which consisted of text messages, presentations, booklets, brochures, posters, videos, and films. Further, (15.6%) of the articles utilized peer education, where some students (peers) were well-trained to become peer educators. The mass method, which includes web-based modules and videos and campaign promotion through social media, for example, using Facebook pages to promote and educate and using TV episodes for campaign promotion, was not commonly used in such interventions (13.2%).

Regarding the most effective method used for improving sexual behavior, interactive activities was responsible for (63.3%) of the improved sexual behavior outcome and (61.9%) of the increased knowledge outcome. In the previous outcomes, lecturing was the second most effective method, resulting in (34.2%) improved sexual outcomes and (37.1%) increased knowledge outcomes. The use of mass methods was the least effective, accounting for only (13.8%) of the improved sexual behavior outcome and (10.5%) of the increased knowledge outcome. When discussing methods and outcomes, keep in mind that each study used multiple methods and multiple outcomes, each of which was measured separately. The methods utilized in SRH interventions are provided in Figure 3.

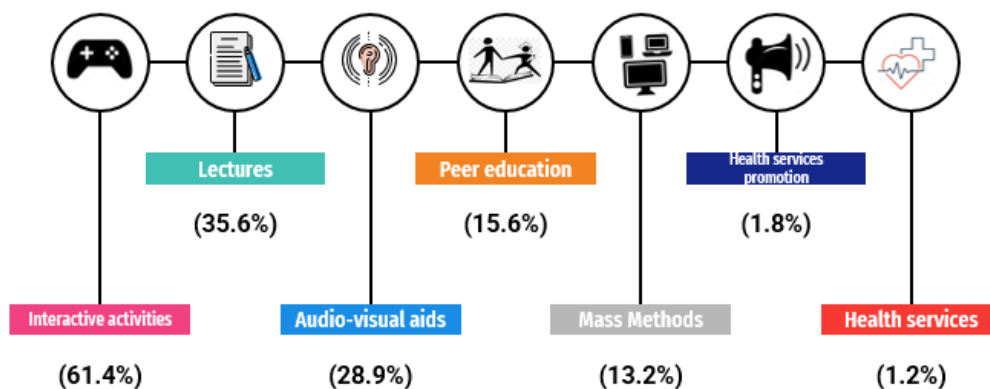


Figure 3. Methods utilized in SRH interventions for males globally.

Assessment of campaigns/programs outcomes:

To assess the campaigns' efficacy in terms of both their content and their execution, several outcomes were evaluated. Sexual behavior (63.8%) and knowledge (63.2%) were the most critical measures calculated. Followed by communication about sex (12.6%),

personal attitudes (11.6%), program acceptance (7.8%), and use of health services (4.8%).

The campaign outcomes reported are shown in Figure 4.

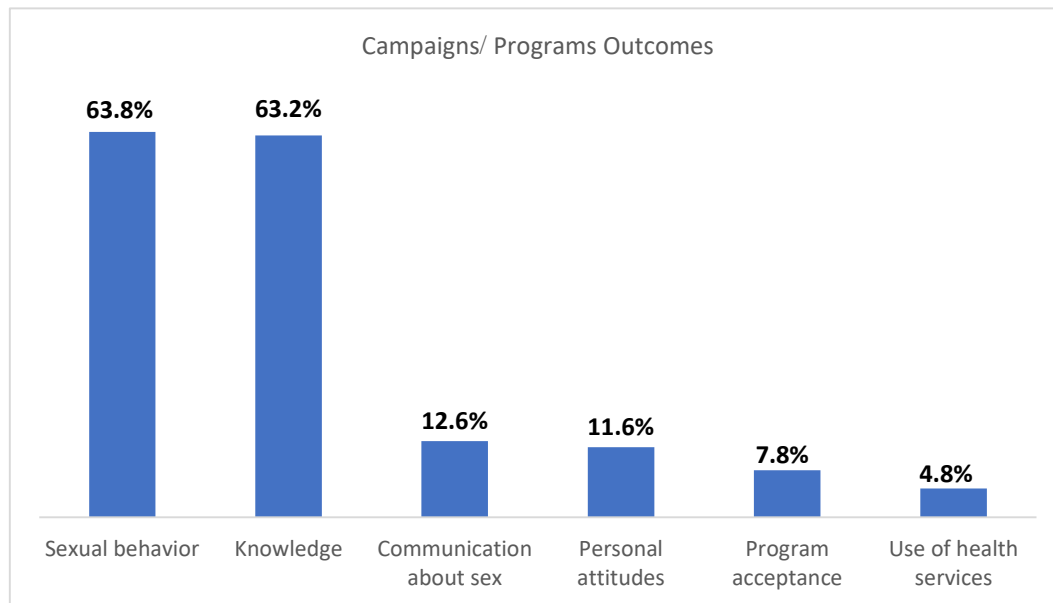


Figure 4. The percentage of outcomes used to measure the effectiveness of sexual reproductive health programs/campaigns.

Discussion:

This scoping review described adolescent male sexual and reproductive health awareness programs. It also discussed the program interventions' efficacy, contexts, domains, and methods. This review found a lack of awareness programs for young males (86). Lack of campaigns and awareness programs and low male inclusion are due to several factors. First, males are difficult to convince of the importance of SRH and that it must be a shared responsibility with their partners. Furthermore, studies have shown that one of the major barriers to male's participation in SRH interventions is their inadequate knowledge about the risks of STIs and their resistance to gaining new knowledge in SRH domains,

influencing their participation and decisions about family planning. This effect is amplified due to power dynamics in which male's decisions and beliefs are prioritized over their partner's (87). Also, males have trouble discussing sexual issues (88). This could be attributed to traditional masculinity beliefs that view STIs and sex as disgraceful, which have been found to influence males' decisions and care-seeking (89). Males also think health care providers should lead SRH interventions because they're skilled at it, preventing them from taking the lead in the participation in such interventions (90).

Our review identified family planning as the most used domain in SRH interventions. This domain mainly discussed STIs and birth-control methods. The high prevalence of STIs among youth in general (91) and among LMICs youth specifically (92) -For example, nearly 80% of HIV-positive Africans are between 15 and 24 years of age (93, 94),- emphasizes the importance of family planning education as a primary prevention method that can help reduce the incidence of STIs.

However, it should be noted that the high numbers of interventions utilizing family planning as their main domain especially in low-income countries could be attributed to the worldwide population control agenda, driven by concerns about resource scarcity and environmental sustainability (95). This approach should be replaced a reproductive health approach that focuses on women's health and wellbeing instead of seeing her as " a baby producer " only (96).

Our study found that the different SRH domains used raised youth awareness of SRH and improved their sexual behaviors. However, those domains concentrated on biological aspects with less focus on more sensitive topics like safe abortion (97, 98). The difficulty

program developers and decision-makers have in including such topics and being open in adolescent interventions may stem from the stigma associated with adolescent pregnancy, especially in low-income countries, as well as religious considerations and various cultural barriers (88).

As for high-income countries, USA and UK mainly concentrated on family planning due to high STI and teenage pregnancy rates (99). In the USA alone, there are almost ten million new teenage pregnancy cases yearly (100). Additionally, studies have shown that the age for marriage has increased, creating a gap between puberty and marriage, which increases reckless sexual activity and multiple sexual partners, making adolescents more susceptible to STIs (101). Family planning raised awareness about STIs and teen pregnancy by identifying birth-control methods, especially male condoms. Condom use and its benefits were shown in several interventions. Some interventions even provided free-of-charge condoms to encourage birth control methods use and reduce the negative effects of unprotected sex (102, 103).

In terms of the most commonly used methods in SRH awareness campaigns, interactive techniques such as discussion groups, drama sessions, and acting lessons were the most commonly used. It aimed to increase adolescent positive participation and engagement in the available activities. This method reported improved sexual knowledge and behavior, according to our review and the literature(104). On the other hand, mass methods—TV, radio, and others—improved knowledge and health promotion, but they were the least used (105). The reason behind this could be attributed to the poor conditions in LMICs that force them to prioritize traditional and cheaper methods. Also,

the "culture of silence" and sociocultural constraints on discussing sexual topics make mass methods of SRH awareness complicated (106).

Each program used a variety of SRH domains and methods, making it difficult to determine which method was used for which domain, especially since studies did not provide this information. However, using multiple domains made the programs more comprehensive and effective at improving sexual health knowledge and behavior. Comprehensive sexuality education has been found to be very effective, so the more comprehensive the intervention, the more beneficial it is to the participants (107).

Sexual and reproductive health interventions are scarce in LMICs and low-income countries. Almost half of the studies, as our findings show, were conducted in high-income settings. While only (6.0%) of SRH interventions were implemented in low-income countries, (25.9%) were implemented in LMICs. Most of those countries are in conflict and lack security and trained health workers, which may explain the low number of interventions as governments in conflict zones don't prioritize SRH interventions, a lack of skilled teachers, other resources, and funding has hampered SRH intervention (108). SRH interventions in conflict-affected settings should be reported more, as there is currently a general absence of reporting (109).

The growing rates of STIs among adolescents worldwide indicate the high number of wrong sex practices, necessitating male-targeted interventions for maximum reach effectiveness. This requires modern methods that are acceptable among youth. One suggestion is using mobile applications for education and consultation on sexually related matters. Using technology can reach youth and involve them in SRH, as adolescents are

usually excited to use new creative techniques. In addition, most adolescents have regular access to technology and smartphones; even in LMICs, smartphone use has increased rapidly in the last years (80, 110). It can also overcome adolescent concerns about stigma, confidentiality, and privacy when sharing private sexual information. Thus, For this idea to reach optimal success, it has to be culturally sensitive and socially appropriate for adolescents (111).

It was notable that none of the included studies reported on campaigns in the EMR. Cultural barriers like religious beliefs, considering care-seeking behavior abnormal, especially for males, and viewing clinics as places that are particular for females and children may explain the lack of SRH interventions in this area (88, 112). Furthermore, it is difficult for EMR countries with such conservative cultures to engage in gender-related programs. This engagement requires massive inter-sectoral efforts and funding, which generally needs to be improved in those countries' public sectors because a lack of funding forces them to prioritize and focus on female's health, which suppresses the required change (113). Furthermore, teachers in the EMR are often unprepared and uncomfortable discussing such sensitive topics (114), resulting in partial implementation of adolescent SRH interventions (98). However, it is important to stress that the aforementioned requirement for reporting should be taken into account when studying SRH intervention in EMR countries, as interventions may be carried out but not reported (109, 115). This is primarily due to resource constraints resulting from unstable politics and economy in those settings living (116), forcing them to prioritize service delivery over awareness campaigns, which makes conducting and documenting such campaigns impossible (117).

Strengths and Limitations:

This scoping review provides a comprehensive overview of global male-inclusive SRH programs, as well as identifying the most commonly SRH domains addressed and used methods to communicate these domains for adolescent males. Yet, because this scoping review only used peer-reviewed articles, there was a dearth of resources, particularly in the EMR, which led to a scarcity of sources providing information about potential campaigns that could be conducted in those regions but reported in grey literature.

Conclusion

This scoping review provides an overview of the approaches and topics covered in interventions directed toward adolescent males around the world. It also details the primary features of these interventions, including where they were held, whom they were aimed at, and how old their intended recipients were. The findings of this review can assist policymakers in LMICs, particularly those in the EMR region, in developing a comprehensive program that incorporates the methods and domains that have been found to be effective, particularly for males, in order to maximize the benefit for all. Efforts should be directed toward greater inclusion of males in SRH interventions, particularly in the EMRO region, where such interventions for males were found to be lacking. Males should also be made more aware of the importance of participating in such interventions and encouraged to do so. More training should be provided to the staff and teachers in charge of providing such interventions in order to improve their abilities to teach such sensitive topics and deal with teenage participants who can be difficult to deal with. Finally, improving the reporting process of SRH interventions in LMICs and

humanitarian settings should be prioritized, as this allows future research to identify gaps and barriers to including males in those interventions, thereby improving SRH in those settings.

Ethical consideration: not applicable.

Funding: This study was funded by International Development Research Centre (ID number 109011-001).

Declaration of Competing Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Overall discussion

This study determined that there are efforts being made in the occupied Palestine regarding health research for adolescents. However, those efforts should be improved and organized so that they can meet the specific needs of the target group, considering the unique conditions Palestinians suffer every day. It also found a scarcity of published information on interventions geared toward adolescents highlighting a significant need for work and development in this area.

Furthermore, a gap in SRH was identified in the topics addressed for adolescents, especially males. This gap has led to the conduct of the second review that aimed to estimate the actual situation regarding SRH programs for males around the world. It also determined the most successful topics and methods used in those campaigns for each age group, thereby helping policymakers build evidence-based interventions explicitly tailored to adolescent males' health requirements according to their age.

Through our first review we able to identify the main topics the research initiatives and interventions focused on. Those topics include non-communicable diseases (mainly mental health, health behaviors and risks, and subjective well-being. According to studies around the world, the main health problems that adolescents face include mental health, sexual health, physical violence, malnutrition, and substance abuse (118, 119), all of which have been addressed in the Palestinian context. Yet, it should be noted that none of the studies mentioned that any needs assessment had been conducted before choosing the topic they discussed.

Additionally, each intervention included in the first review used multiple methods to address the intended topics. These methods include health awareness, activities, services

enabling the adolescents' environment, therapeutic and counseling services, and food fortification. The main method that most of the interventions used was health awareness; education campaigns are considered the main route used in adolescent programs. However, this is not precisely the case globally, as there are trends to use new comprehensive programs that have proven to enhance awareness and health simultaneously. Such programs include new methods such as youth-friendly services and peer education; instead of using education alone, those newer methods provide awareness alongside other services and have the potential to increase adolescents' engagement, thereby enhancing their overall health (120-122).

In the Palestinian context, such methods might already be utilized in the health service provided, programs, and campaigns for adolescents and even might exist in schools. However, as in many conflict settings, the need for proper documentation of the provided services and interventions might be one of the primary reasons that we are not able to locate and study those methods and their effect on adolescents (109). Moreover, the limited resources in the occupied Palestine and the fragmentation of the health system present additional obstacles to the documentation of health programs and research projects implemented in the region (12, 50).

Another main finding of our study was that the primary funding source of interventions and research conducted in the occupied Palestine was international. Furthermore, these initiatives were primarily conducted in the presence of foreign researchers, and none of the interventions were modified or changed to be context specific. This suggests that an international influence could control the topics addressed (63).

Through this review a gap was identified in SRH interventions in the Palestinian context in general and for males in particular. Engaging males in sexual and reproductive health (SRH) interventions is critical because they are vulnerable throughout their adolescent years and because of the multiple benefits it provides for them and their future families (123). Whether it's about family planning, preventing sexually transmitted infections (STIs), or dealing with violence, their active engagement provides a comprehensive approach to SRH with long-term implications (82-84).

Also, as no previous research on males' sexual health situation in the occupied Palestine was available in the included articles. Extensive research of SRH of males globally was required in order to identify the most successful methods and topics used in those interventions, in order for those results to help us build a proper program that is capable of meeting the actual needs of adolescent males.

This was met through our second review, in which we were able to identify those topics and methods and for which target group they are used. This data can help profoundly in building successful programs that can meet adolescent males' needs.

Through this review it was notable that there is a whole absence of SRH programs targeting adolescent males in the Eastern Mediterranean Region (EMR) in the peer-reviewed articles that were included in our study (124). This could result from the dominant cultural barriers in this region, which deals with SRH as a sensitive topic and views males' participation in such programs as a taboo (88, 112). It could also result from the absence of reporting, as there could be some initiatives that are not reported (109). Many EMR countries are also in conflict, which may make SRH less of a priority and create new challenges and barriers to the programs implemented in these areas (125).

Regarding the main domains addressed in SRH interventions globally, family planning was the most commonly discussed topic for adolescents from both age groups (10 to 14) and (15 to 19). It was followed by the sexual health domain. All the addressed domains were found to be effective in raising awareness and enhancing sexual behavior. The importance of such topics, especially in LMIC settings, is that they address pregnancy and STIs, which are considered raising problems in the area that need to be addressed (97, 98). However, it should also be taken into consideration that the high concentration of SRH programs on family planning especially in the least developed countries could be part of the global agenda of population growth to lower the numbers of childbirth (95). Thus, program developers and providers should be cautious when delivering this topic.

As for the methods utilized mainly in SRH interventions for males, interactive techniques were the most common. However, such techniques were not the most commonly utilized methods in interventions in the occupied Palestine, meaning that building an intervention that utilizes this method could need training for healthcare providers, but is more able to gain positive outcomes when compared with the traditional methods of education that are commonly used in the occupied Palestine (104).

At last, for evidence-based SRH interventions to be successful in the Palestinian context, multiple strategies must be implemented. This includes being culturally sensitive and overcoming any cultural difficulties such a topic may encounter in this conservative culture. Also, the domains covered in SRH and methods employed in such interventions must be gender-specific to fulfill the actual needs of their target population, whether males or females. Considering this can increase the program's acceptability and improve its outcomes (111). Additionally, continuous evaluation through feedback from trainers

and adolescents is essential for the continuity, success, and development of those programs so that they can always keep up with the newest available information and the changing needs of adolescents (126).

Conclusion

Health interventions for adolescents in the occupied Palestine are being prioritized, and efforts are being made to address the health needs of Palestinian adolescents. However, numerous advancements in methodologies used and the efficiency of those interventions, taking into account the problems experienced by Palestinian adolescents, are needed. Furthermore, a gap in the availability of health interventions and in SRH awareness for males in Palestine and globally is evident, highlighting a need for comprehensive and culturally sensitive programs for adolescents.

The importance of culturally sensitive, evidence-based techniques was emphasized in the review of the global SRH intervention for adolescent males. Addressing this sensitive topic requires specific techniques that respect cultural norms while enhancing adolescent participation and knowledge.

To develop adolescents' health interventions and research sector in the occupied Pales and globally, it is of paramount importance to take into account the perspectives of adolescents, involve local researchers, and utilize evidence-based methods that hold promise for bridging the existing gap and enhancing the health and awareness of adolescents.

Recommendations

Documentation

1. When the entire age group (10 to 19) is targeted, the reporting process should be improved by providing segregated data for each age group. This will enable researchers to determine their needs, evaluate existing interventions, and identify gaps in services and research for each group.
2. Efforts should be made to overcome barriers to documentation in the occupied Palestine, such as limited resources and fragmented health systems.
3. Extensive work and development in the area of adolescent health research should be done, particularly in publishing interventions geared toward adolescents. Efforts should be made to encourage and support the publication of such information, which will aid in the development of successful programs for adolescents.

Adolescent SRH Programs

4. SRH interventions should be culturally sensitive and consider the conservative culture. Domains and methods used should be gender-specific to meet the actual needs of the target population.
5. Policymakers and organizations concerned with adolescent health should prioritize adolescent male inclusion in sexual and reproductive health programs. This involves creating programs that target and address the unique needs of adolescent males in LMICs and the EMR.

6. It is crucial to conduct needs assessments to ensure that the selected topics align with the actual requirements of adolescents.
7. Healthcare workers and teachers should receive comprehensive education and capacity development to effectively deal with sexual and reproductive health issues related to males. This includes understanding the obstacles encountered by adolescent males and developing strategies to involve them in SRH interventions successfully.
8. Methods and tools used in adolescent health interventions should be contextualized to enhance the outcomes of those interventions.
9. The selection of methods employed to enhance teenage awareness should be based upon the most current research regarding their efficacy.

Policies and national priorities

10. Continuous evaluation through feedback from trainers and adolescents is essential for the continuity, success, and development of SRH programs.
11. Enhance the inclusion of the younger age group of adolescents aged (10 to 14) in interventions and research efforts.
12. Involve stakeholders, parents, schools, and the local community in SRH programs to obtain an in-depth view of cultural norms, beliefs, and attitudes regarding males' SRH. Additionally, engaging these groups is crucial for improving the community's acceptability of such programs.

13. Local researchers in the occupied Palestine should be encouraged to engage more in adolescent health research and the development of evidence-based interventions for adolescents, as they are more familiar with the specific requirements of adolescents in their communities.

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Annexes

Annex 1: Article one: Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Under the title of Abstract. Page 1.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Introduction section. Pages 2,3 and 4
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Introduction section. And Paragraph 1 under methodology section Page5 and 6.
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Not applicable, scoping review process was included in the manuscript, review protocol was not registered due to review nature.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Paragraph 2 under Methodology section. Page 6.
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Paragraph 3 Methodology section. Page 6.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Paragraphs 3 in page 6.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Methodology section, under selection criteria section. Page 6 and 7.
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Methodology section, Page 7.
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Under methodology section. Page 7.
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used	Not applicable. Peer-reviewed articles were appraised for appropriateness.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Under methodology section. Page 7.
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Results section Paragraphs 1 and 2. Figure 1. Pages 8 and 9.
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Results section. Tables 1 and 2
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable.
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Results section. Tables 1 and 2 Pages 10 to 18.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Results section. Tables 1 and 2 Pages 10 to 18.
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Under Discussion section. Pages 18 to 21.
Limitations	20	Discuss the limitations of the scoping review process.	Under Strengths and Limitation section. Page 21.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Under Conclusion section. Page 21.
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Under funding section page 22.

JB I = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: [10.7326/M18-0850](https://doi.org/10.7326/M18-0850).

Annex 2: The included peer-reviewed articles in article one.

Authors	Title	Reference
Abuhaloob, L.; Abed, Y	Dietary behaviours and dental fluorosis among Gaza Strip children	Abuhaloob L, Abed Y. Dietary behaviours and dental fluorosis among Gaza Strip children. EMHJ-Eastern Mediterranean Health Journal, 19 (7), 657-663, 2013. 2013.
SHADI ABULKIBASH	The Exposure to Traumatic Experiences Among the Palestinian Students in the West Bank	Abualkibash SK. The Exposure to Traumatic Experiences Among the Palestinian Students in the West Bank. Bioscience Biotechnology Research Communications. 2020;13(3):1510-9.
Niveen M. E. Abu-Rmeileh1 , Ethel Alderete2 , Abdullatif Husseini1 , Jennifer Livaudais-Toman3 and Eliseo J. Pérez-Stable	Country and gender differences in the association between violence and cigarette smoking among youth	Abu-Rmeileh NM, Alderete E, Husseini A, Livaudais-Toman J, Pérez-Stable EJ. Country and gender differences in the association between violence and cigarette smoking among youth. Conflict and health. 2020 Dec;14:1-1.
Alean Al-Krenawi1 & John R.Graham	The impact of political violence on psychosocial functioning of individuals and families: the case of palestinian adolescents	Al-Krenawi A, Graham JR. The impact of political violence on psychosocial functioning of individuals and families: The case of Palestinian adolescents. Child and Adolescent Mental Health. 2012 Feb;17(1):14-22.
Mohamed A. S. Altawil1* , Aiman El-Asam2 and Ameerah Khadaroo	Impact of chronic war trauma exposure on PTSD diagnosis from 2006 -2021: a longitudinal study in Palestine	Altawil MA, El-Asam A, Khadaroo A. Impact of chronic war trauma exposure on PTSD diagnosis from 2006-2021: a longitudinal study in Palestine. Middle East Current Psychiatry. 2023 Dec;30(1):1-8.

Sami Amer , Elham Kateeb	Factors related to dietary habits, energy drink consumption, and physical activity in marginalized Palestinian schools: A cross-sectional study	Amer S, Kateeb E. Factors related to dietary habits, energy drink consumption, and physical activity in marginalized Palestinian schools: A cross-sectional study. Health Promotion Perspectives. 2021;11(3):329.
Khuloud Khayat Dajani, Ziad Abdeen, Radwan Qasrawi	Violent Behavior among Adolescents: Findings from the National Survey of Palestinian School Children	Dajani KK, Abdeen Z, Qasrawi R. Violent Behavior among Adolescents: Findings from the National Survey of Palestinian School Children. Dear Reader. 2013;24(2):117-23.
Basma R Damiri	The Use of Psychoactive Substances in a Conflict Area in the West Bank: Drug Use Risk Factors and Practices in Palestinian Refugee Camps	Damiri BR. The use of psychoactive substances in a conflict area in the West Bank: Drug use risk factors and practices in Palestinian refugee camps. International Journal of Mental Health and Addiction. 2020 Dec;18(6):1507-20.
Basma R. Damiri1* , Isra' A. Salahat2 and Mai H. Aghbar	Pattern of substance use among schoolchildren in Palestine: a cross-sectional study	Damiri BR, Salahat IA, Aghbar MH. Pattern of substance use among schoolchildren in Palestine: a cross-sectional study. Egyptian Journal of Forensic Sciences. 2018 Dec;8(1):1-0.
: Eric F. Dubow , Paul Boxer , L. Rowell Huesmann , Simha Landau , Shira Dvir , Khalil Shikaki & Jeremy Ginges	Cumulative Effects of Exposure to Violence on Posttraumatic Stress in Palestinian and Israeli Youth	Dubow EF, Boxer P, Huesmann LR, Landau S, Dvir S, Shikaki K, Ginges J. Cumulative effects of exposure to violence on posttraumatic stress in Palestinian and Israeli youth. Journal of Clinical Child & Adolescent Psychology. 2012 Nov 1;41(6):837-44.

Basel El-Khodary- Muthanna Samara	The relationship between multiple exposures to violence and war trauma, and mental health and behavioural problems among Palestinian children and adolescents	El-Khodary B, Samara M. The relationship between multiple exposures to violence and war trauma, and mental health and behavioural problems among Palestinian children and adolescents. <i>European child & adolescent psychiatry</i> . 2020 May;29:719-31.
Lamis Abuhaloob and Poul Erik Petersen	Oral health status among children and adolescents in governmental and private schools of the Palestinian Territories	Abuhaloob L, Petersen PE. Oral health status among children and adolescents in governmental and private schools of the Palestinian territories. <i>International Dental Journal</i> . 2018 Apr 1;68(2):105-12.
Bassam Abu Hamad , Nicola Jones and Ingrid Gercama	Adolescent access to health services in fragile and conflict-affected contexts: The case of the Gaza Strip	Abu Hamad B, Jones N, Gercama I. Adolescent access to health services in fragile and conflict-affected contexts: The case of the Gaza Strip. <i>Conflict and health</i> . 2021 Dec;15(1):1-3.
Manal M. Badrasawi1 , Laith M. Abu.Snouber2 , Mohammed A. Al-Tamimi1 , Kamal J. Badrasawi3	Prevalence, Risk Factors and Psychosocial Status of Obese and Overweight Adolescents in Hebron City, Palestine	Badrasawi MM, Snouber LM, Al-Tamimi MA, Badrasawi KJ. Prevalence, risk factors and psychosocial status of obese and overweight adolescents in Hebron city, Palestine. <i>International Journal of Nutrition, Pharmacology, Neurological Diseases</i> . 2019 Apr 1;9(2):72-9.
Safwat Y. Diab a, * , Jon-Håkon Schultz	Factors contributing to student academic underachievement in war and conflict: A multilevel qualitative study	Diab SY, Schultz JH. Factors contributing to student academic underachievement in war and conflict: A multilevel qualitative study. <i>Teaching and Teacher Education</i> . 2021 Jan 1;97:103211.

<p>Farid A.W. Ghrayeb, A. Mohamed Rusli, Ayesha Al Rifai and Mohd Ismail 1</p>	<p>Non-communicable diseases behavioral risk factors among Palestinian adolescents: A descriptive study from a rural community of Tarqumia</p>	<p>Ghrayeb FA, Rusli AM, Al Rifai A, Ismail M. Non-communicable diseases behavioral risk factors among Palestinian adolescents: a descriptive study from a rural community of Tarqumia. World Journal of Medical Sciences. 2014;10(3):267-74.</p>
<p>Peter Glick, Umaiye Al-Khammash, Mohammed Shaheen, Ryan Brown, Prodyumna Goutam, Rita Karam, Sebastian Linnemayr, Salwa Massad</p>	<p>Health risk behaviours of Palestinian youth: findings from a representative survey</p>	<p>Glick P, Al-Khammash U, Shaheen M, Brown R, Goutam P, Karam R, Linnemayr S, Massad S. Health risk behaviours of Palestinian youth: findings from a representative survey. Eastern Mediterranean health journal= La revue de sante de la Mediterranee orientale= al-Majallah al-sihhiyah li-sharq al-mutawassit. 2018 May 5;24(2):127.</p>
<p>Shira Dvir Gvirsman¹, L. Rowell Huesmann⁴, Eric F. Dubow^{4,5}, Simha F. Landau^{2,3}, Khalil Shikaki⁶, and Paul Boxe</p>	<p>The Effects of Mediated Exposure to Ethnic-Political Violence on Middle East Youth's Subsequent Post-Traumatic Stress Symptoms and Aggressive Behavior</p>	<p>Dvir Gvirsman S, Huesmann LR, Dubow EF, Landau SF, Shikaki K, Boxer P. The effects of mediated exposure to ethnic-political violence on Middle East youth's subsequent post-traumatic stress symptoms and aggressive behavior. Communication research. 2014 Oct;41(7):961-90.</p>
<p>Muhammad M. Haj-Yahia, Becky Leshem, and Neil B. Guterman,</p>	<p>The Rates and Characteristics of the Exposure of Palestinian Youth to Community Violence</p>	<p>Haj-Yahia MM, Leshem B, Guterman NB. The rates and characteristics of the exposure of Palestinian youth to community violence. Journal of interpersonal violence. 2013 Jul;28(11):2223-49.</p>

<p>Yossi Harel-Fisch , Ziad Abdeen , Sophie D. Walsh *, Qasrowi Radwan , Haya Fogel-Grinvald</p>	<p>Multiple risk behaviors and suicidal ideation and behavior among Israeli and Palestinian adolescents</p>	<p>Harel-Fisch Y, Abdeen Z, Walsh SD, Radwan Q, Fogel-Grinvald H. Multiple risk behaviors and suicidal ideation and behavior among Israeli and Palestinian adolescents. <i>Social Science & Medicine</i>. 2012 Jul 1;75(1):98-108.</p>
<p>Nouh Harsha1,2* , Margaret A. Lynch3 and Rita Giacaman4*</p>	<p>Child abuse in the West Bank of the occupied Palestinian territory (WB/oPt): social and political determinants</p>	<p>Harsha N, Lynch MA, Giacaman R. Child abuse in the West Bank of the occupied Palestinian territory (WB/oPt): social and political determinants. <i>BMC public health</i>. 2020 Dec;20:1-0.</p>
<p>L. ROWELL HUESMANN,a ERIC F. DUBOW,a,b PAUL BOXER,a,c SIMHA F. LANDAU,d,e SHIRA DVIR GVIRSMAN,f AND KHALIL SHIKAKI</p>	<p>Children’s exposure to violent political conflict stimulates aggression at peers by increasing emotional distress, aggressive script rehearsal, and normative beliefs favoring aggression</p>	<p>Huesmann LR, Dubow EF, Boxer P, Landau SF, Gvirsman SD, Shikaki K. Children's exposure to violent political conflict stimulates aggression at peers by increasing emotional distress, aggressive script rehearsal, and normative beliefs favoring aggression. <i>Development and psychopathology</i>. 2017 Feb;29(1):39-50.</p>
<p>Suhayla Jalala, Gözde Latifoğlu, and Hüseyin Uzunboylu</p>	<p>Strength-based approach for building resilience in school children: The case of Gaza</p>	<p>Jalala SS, Latifoğlu G, Uzunboylu H. Strength-based approach for building resilience in school children: The case of Gaza. <i>Anales de Psicología/Annals of Psychology</i>. 2020 Jan 1;36(1):1-1.</p>

<p>Marwan O Jalambo¹ , Norimah A Karim² , Ihab A Naser³ and Razinah Sharif²</p>	<p>Prevalence and risk factor analysis of iron deficiency and iron-deficiency anaemia among female adolescents in the Gaza Strip, Palestine</p>	<p>Jalambo MO, Karim NA, Naser IA, Sharif R. Prevalence and risk factor analysis of iron deficiency and iron-deficiency anaemia among female adolescents in the Gaza Strip, Palestine. Public health nutrition. 2018 Oct;21(15):2793-802.</p>
<p>Mohammed Jawad^{1*} , Ali Khader² and Christopher Millett</p>	<p>Differences in tobacco smoking prevalence and frequency between adolescent Palestine refugee and non-refugee populations in Jordan, Lebanon, Syria, and the West Bank: cross-sectional analysis of the Global Youth Tobacco Survey</p>	<p>Jawad M, Khader A, Millett C. Differences in tobacco smoking prevalence and frequency between adolescent Palestine refugee and non-refugee populations in Jordan, Lebanon, Syria, and the West Bank: cross-sectional analysis of the Global Youth Tobacco Survey. Conflict and health. 2016 Dec;10(1):1-8.</p>
<p>Hendrik Jürges¹ · Sophie-Charlotte Meyer²</p>	<p>Cognitive ability and teen smoking</p>	<p>Jürges H, Meyer SC. Cognitive ability and teen smoking. The European Journal of Health Economics. 2020 Mar;21:287-96.</p>
<p>Elham Kateeb, Motasem Hamdan, Julian Fisher</p>	<p>Oral Health Status and Associated Factors in a Stratified Cluster Sample of Marginalized Palestinian Schools: A Cross-sectional Study</p>	<p>Kateeb E, Hamdan M, Fisher J. Oral Health status and associated factors in a stratified cluster sample of marginalized Palestinian schools: a cross-sectional study.</p>

Ibrahim A. Kira ^{1*} , Jeffrey S. Ashby ² , Linda Lewandowski ³ , Abdul Wahhab Nasser Alawneh ⁴ , Jamal Mohanesh ⁵ , Lydia Odenat ⁶	Advances in Continuous Traumatic Stress Theory: Traumatogenic Dynamics and Consequences of Intergroup Conflict: The Palestinian Adolescents Case	Kira IA, Ashby JS, Lewandowski L, Alawneh AW, Mohanesh J, Odenat L. Advances in continuous traumatic stress theory: Traumatogenic dynamics and consequences of intergroup conflict: The Palestinian adolescents case. <i>Psychology</i> . 2013 Apr 12;4(04):396.
Becky Leshem a, Muhammad M. Haj-Yahia b, *, Neil B. Guterman	The characteristics of help seeking among Palestinian adolescents following exposure to community violence	Leshem B, Haj-Yahia MM, Guterman NB. The characteristics of help seeking among Palestinian adolescents following exposure to community violence. <i>Children and youth services review</i> . 2015 Feb 1;49:1-0.
Huaqing Liu ^{1,2} , Min Zhang ³ , Peipei Fu ^{1,4} , Yan Chen ⁵ and Chengchao Zhou	Dual Burden of Malnutrition Among Adolescents With Hunger Aged 12–15 Years in 41 Countries: Findings From the Global School-Based Student Health Survey	Liu H, Zhang M, Fu P, Chen Y, Zhou C. Dual Burden of Malnutrition Among Adolescents With Hunger Aged 12–15 Years in 41 Countries: Findings From the Global School-Based Student Health Survey. <i>Frontiers in Medicine</i> . 2022 Jan 10;8:771313.
Fayez Mahamid ^{1,2} & Denise Ziya Berte	Happiness, Sadness, and Hope for the Future in Narratives of Palestinian Refugee Children	Mahamid F, Berte DZ. Happiness, sadness, and hope for the future in narratives of Palestinian refugee children. <i>International Journal of Mental Health and Addiction</i> . 2020 Dec;18(6):1638-51.

Catherine A. Maloney 1,2,* , Laura E. Miller-Graff 1,2 , Bethany Wentz 1 and Edward Mark Cummings	Evaluating the Role of Maternal and Paternal Trauma Exposure, Emotional Security, and Mental Health in Predicting Psychological Adjustment among Palestinian Adolescents	Maloney CA, Miller-Graff LE, Wentz B, Cummings EM. Evaluating the Role of Maternal and Paternal Trauma Exposure, Emotional Security, and Mental Health in Predicting Psychological Adjustment among Palestinian Adolescents. International Journal of Environmental Research and Public Health. 2022 Jul 29;19(15):9288.
Salwa G Massad1,2, Rita Karam3 , Ryan Brown3 , Peter Glick3 , Mohammed Shaheen4*, Sebastian Linnemayr3 and Umaiye Khammash5	Perceptions of sexual risk behavior among Palestinian youth in the West Bank: a qualitative investigation	Massad SG, Karam R, Brown R, Glick P, Shaheen M, Linnemayr S, Khammash U. Perceptions of sexual risk behavior among Palestinian youth in the West Bank: a qualitative investigation. BMC public health. 2014 Dec;14:1-7.
Mazaba, M. L.; Mulenga, D.; Kwangu, M.; Njunju, E. M.; Siziya, S.	SUICIDAL IDEATION AMONG ARAB ADOLESCENTS IN SCHOOL IN THE WEST BANK	Mazaba ML, Mulenga D, Mwenya Kwangu BV, Njunju EM, Siziya S. Suicidal ideation among Arab adolescents in school in the west bank. A Global VIEW ON SUICIDAL IDEATION AMONG ADOLESCENTS. 2017:163.

<p>Abdulrahman O. Musaiger,¹ Mariam Al-Mannai,² Reema Tayyem,³ Osama Al-Lalla,⁴ Essa Y. A. Ali,⁵ Faiza Kalam,⁶ Mofida M. Benhamed,⁷ Sabri Saghir,⁸ Ismail Halahleh,⁹ Zahra Djoudi,¹⁰ and Manel Chirane¹</p>	<p>Perceived Barriers to Healthy Eating and Physical Activity among Adolescents in Seven Arab Countries: A Cross-Cultural Study</p>	<p>Musaiger AO, Al-Mannai M, Tayyem R, Al-Lalla O, Ali EY, Kalam F, Benhamed MM, Saghir S, Halahleh I, Djoudi Z, Chirane M. Perceived barriers to healthy eating and physical activity among adolescents in seven Arab countries: a cross-cultural study. <i>The Scientific World Journal</i>. 2013 Jan 1;2013.</p>
<p>Niwa, E. Y.; Boxer, P.; Dubow, E.; Huesmann, L. R.; Shikaki, K.; Landau, S.; Gvirsman, S. D.</p>	<p>Growing Up Amid Ethno-Political Conflict: Aggression and Emotional Desensitization Promote Hostility to Ethnic Outgroups</p>	<p>Niwa EY, Boxer P, Dubow E, Huesmann LR, Shikaki K, Landau S, Gvirsman SD. Growing up amid ethno-political conflict: Aggression and emotional desensitization promote hostility to ethnic outgroups. <i>Child development</i>. 2016 Sep;87(5):1479-92.</p>
<p>Peltonen, Kirsi; Qouta, Samir; Diab, Marwan; Punamäki, Raija-Leena</p>	<p>Resilience Among Children in War: The Role of Multilevel Social Factors</p>	<p>Peltonen K, Qouta S, Diab M, Punamäki RL. Resilience among children in war: The role of multilevel social factors. <i>Traumatology</i>. 2014 Dec;20(4):232.</p>
<p>Karl Peltzer,^{a,b,c} Supa Pengpid</p>	<p>Cannabis Use and Its Social Correlates among In-School Adolescents in Algeria, Morocco, Palestine, Peru, and Tonga</p>	<p>Peltzer K, Pengpid S. Cannabis use and its social correlates among in-school adolescents in Algeria, Morocco, Palestine, Peru, and Tonga. <i>Mediterranean Journal of Social Sciences</i>. 2014 May 1;5(9):558.</p>

<p>Radwan Qasrawi^{1,2} , PhD; Stephanny Paola Vicuna Polo³ , MA; DIALA Abu Al-Halawa ⁴ , MD; Sameh Hallaq⁵ , PhD; Ziad Abdeen</p>	<p>Assessment and Prediction of Depression and Anxiety Risk Factors in Schoolchildren: Machine Learning Techniques Performance Analysis</p>	<p>Qasrawi R, Polo SP, Al-Halawa DA, Hallaq S, Abdeen Z. Assessment and prediction of depression and anxiety risk factors in schoolchildren: machine learning techniques performance analysis. JMIR Formative Research. 2022 Aug 31;6(8):e32736.</p>
<p>Michael Rosenbaum¹ Tammie Ronen¹ Izzeldin Abuelaish² Hod Orkibi³ Liat Hamama</p>	<p>Positivity Ratio Links Self-control Skills to Physical Aggression and Happiness in Young Palestinians Living in Gaza</p>	<p>Rosenbaum M, Ronen T, Abuelaish I, Orkibi H, Hamama L. Positivity ratio links self-control skills to physical aggression and happiness in young Palestinians living in Gaza. Young. 2018 Sep;26(4_suppl):78S-95S.</p>
<p>hasin F. Saleha,[*] , Yoke Rabaia^b , Corey Balsam^b , Zeina Amrob , Samar Kassis^b , Rita Giacaman</p>	<p>Fathers detained, contact restrained: Experiences of Palestinian children visiting their fathers in Israeli detention</p>	<p>Saleh MF, Rabaia Y, Balsam C, Amro Z, Kassis S, Giacaman R. Fathers detained, contact restrained: Experiences of Palestinian children visiting their fathers in Israeli detention. Child Abuse & Neglect. 2019 Oct 1;96:104071.</p>
<p>Mohammed B A Sarhan ,^{1,2} Rika Fujiya,³ Akira Shibanuma ,² Rita Giacaman,⁴ Junko Kiriya,² Akiko Kitamura ,^{2,5} Masamine Jimba</p>	<p>Health literacy as a key to improving weight status among Palestinian adolescents living in chronic conflict conditions: a cross-sectional study</p>	<p>Sarhan MB, Fujiya R, Shibanuma A, Giacaman R, Kiriya J, Kitamura A, Jimba M. Health literacy as a key to improving weight status among Palestinian adolescents living in chronic conflict conditions: a cross-sectional study. BMJ open. 2022 Sep 1;12(9):e061169.</p>

<p>Lena Schindler 1,* ,† , Mohammed Shaheen 2,* ,†, Rotem Saar- Ashkenazy 3,4, Kifah Bani Odeh 2 , Sophia-Helen Sass 1 , Alon Friedman 3,5 and Clemens Kirschbaum</p>	<p>Victims of War: Dehydroepiandrosterone Concentrations in Hair and Their Associations with Trauma Sequelae in Palestinian Adolescents Living in the West Bank</p>	<p>Schindler L, Shaheen M, Saar-Ashkenazy R, Bani Odeh K, Sass SH, Friedman A, Kirschbaum C. Victims of war: dehydroepiandrosterone concentrations in hair and their associations with trauma sequelae in palestinian adolescents living in the West Bank. Brain sciences. 2019 Jan 23;9(2):20.</p>
<p>Abdelaziz Thabet, Omar EL-Buhaisi, Panos Vostanis</p>	<p>Trauma, PTSD, Anxiety, and coping strategies among Palestinians adolescents exposed to War on Gaza</p>	<p>Thabet A, El-Buhaisi O, Vostanis P. Trauma, PTSD, anxiety and coping strategies among Palestinians adolescents exposed to war in Gaza. The Arab Journal of Psychiatry. 2014 May;44(1152):1-24.</p>
<p>Khalid A. Kheirallah, PhD1 ; Jomana W. Alsulaiman, MD2 ; Mohammad H. Al- Sakran, MSc4 ; Sukaina Alzyoud, PhD3 ; Sreenivas P Veeranki, DrPH5 ; Kenneth D. Ward, PhD6</p>	<p>Waterpipe Tobacco Smoking among Arab Youth; a Cross-Country Study</p>	<p>Kheirallah KA, Alsulaiman JW, Alzyoud S, Veeranki SP, Ward KD. Waterpipe tobacco smoking among Arab youth; a cross-country study. Ethnicity & disease. 2016;26(1):107.</p>
<p>Radwan Qasrawi 1,2 * and Diala Abu Al- Halawa</p>	<p>Cluster Analysis and Classification Model of Nutritional Anemia Associated Risk Factors Among Palestinian Schoolchildren, 2014</p>	<p>Qasrawi R, Abu Al-Halawa D. Cluster Analysis and Classification Model of Nutritional Anemia Associated Risk Factors Among Palestinian Schoolchildren, 2014. Frontiers in Nutrition. 2022 May 10;9:838937.</p>

<p>ZIAD ABDEEN, MPH, PHD, ANAT BRUNSTEIN-KLOMEK, PHD, ORA NAKASH, PHD, NABIL SHIBLI, MSW, MAAYAN NAGAR, MA, HAZEM AGHA, MPH, PHD, SAMEH HALLAQ, MBA, YANIV KANAT-MAYMON, PHD, HENDRIK JUERGES, PHD, ITZHAK LEVAV, MD, AND RADWAN QASRAWI, MA</p>	<p>The Association Between Political Violence and the Connection Between Bullying and Suicidality Among Palestinian Youth</p>	<p>Abdeen Z, Brunstein-Klomek A, Nakash O, Shibli N, Nagar M, Agha H, Hallaq S, Kanat-Maymon Y, Juerges H, Levav I. The association between political violence and the connection between bullying and suicidality among Palestinian youth. <i>Suicide and Life-Threatening Behavior</i>. 2018 Feb;48(1):95-104.</p>
<p>Manal Badrasawi* , Ola Anabtawi and Yaqout Al-Zain</p>	<p>Breakfast characteristics, perception, and reasons of skipping among 8th and 9thgrade students at governmental schools, Jenin governance, West Bank</p>	<p>Badrasawi M, Anabtawi O, Al-Zain Y. Breakfast characteristics, perception, and reasons of skipping among 8th and 9th-grade students at governmental schools, Jenin governance, West Bank. <i>BMC nutrition</i>. 2021 Dec;7:1-0.</p>
<p>Lilia Biscaglia1 , Patrizia di Caccamo1 , Irene Terrenato2 , Maria Antonietta Arrica3 , Akihiro Seita4 , Guglielmo Campus2,5* and UNRWA group</p>	<p>Oral health status and caries trend among 12-year old Palestine refugee students: results from the UNRWA's oral health surveys 2011 and 2016</p>	<p>Biscaglia L, di Caccamo P, Terrenato I, Arrica MA, Seita A, Campus G. Oral health status and caries trend among 12-year old Palestine refugee students: results from the UNRWA's oral health surveys 2011 and 2016. <i>BMC oral health</i>. 2019 Dec;19(1):1-0.</p>

Khuloud Khayat Dajani, Ziad Abdeen, Radwan Qasrawi	Prevalence and Risk Factors for Smoking among Palestinian Adolescents: Findings from the National Study of Palestinian School Children	Dajani KK, Abdeen Z, Qasrawi R. Prevalence and risk factors for smoking among Palestinian adolescents: Findings from the National Study of Palestinian School Children. The Arab Journal of Psychiatry. 2013 Nov;44(873):1-0.
Basma Damiri 1 Omar Khatib2 Zaher Nazzal 3 Diala Sanduka2 Siwar Igbaria2 Ammar Thabaleh2 Ahmad Farhoud 2 Lubna Saudi3 Souad Belkebir 3 Rayyan Al Ali4 Mohammed Alili2 Mahmoud Hamdan5 Omar A Safarini2 Omar Younis2 1 Medicine & H	Metabolic Syndrome Associated with Tobacco and Caffeine Products Use Among Refugee Adolescents: Risk of Dyslipidemia	Metabolic Syndrome Associated with Tobacco and Caffeine Products Use Among Refugee Adolescents: Risk of Dyslipidemia
Marwan Diab1,2, Kirsi Peltonen1, Samir R. Qouta3, Esa Palosaari1,4, and Raija-Leena Punamäki	Can functional emotion regulation protect children's mental health from war trauma? A Palestinian study	Diab M, Peltonen K, Qouta SR, Palosaari E, Punamäki RL. Can functional emotion regulation protect children's mental health from war trauma? A Palestinian study. International journal of psychology. 2019 Feb;54(1):42-52.
Safwat Y. Diaba , Esa Palosaarib , Raija-Leena Punamäki	Society, individual, family, and school factors contributing to child mental health in war: The ecological-theory perspective	Diab SY, Palosaari E, Punamäki RL. Society, individual, family, and school factors contributing to child mental health in war: The ecological-theory perspective. Child abuse & neglect. 2018 Oct 1;84:205- 16.

<p>Eric F. Dubow a b , L. Rowell Huesmann b , Paul Boxer c b , Simha Landau d e , Shira Dvir f , Khalil Shikaki g & Jeremy Ginges h</p>	<p>Exposure to Political Conflict and Violence and Posttraumatic Stress in Middle East Youth: Protective Factors</p>	<p>Dubow EF, Huesmann LR, Boxer P, Landau S, Dvir S, Shikaki K, Ginges J. Exposure to political conflict and violence and posttraumatic stress in Middle East youth: Protective factors. <i>Journal of Clinical Child & Adolescent Psychology</i>. 2012 Jul 1;41(4):402-16.</p>
<p>Eric F. Dubow^{1,2} L. Rowell Huesmann² Paul Boxer^{2,3} Cathy Smith² Simha F. Landau⁴ Shira Dvir Gvirsman⁵ Khalil Shikaki</p>	<p>Serious violent behavior and antisocial outcomes as consequences of exposure to ethnic-political conflict and violence among Israeli and Palestinian youth</p>	<p>Dubow EF, Huesmann LR, Boxer P, Smith C, Landau SF, Dvir Gvirsman S, Shikaki K. Serious violent behavior and antisocial outcomes as consequences of exposure to ethnic-political conflict and violence among Israeli and Palestinian youth. <i>Aggressive behavior</i>. 2019 May;45(3):287-99.</p>
<p>Walid El Ansari ^{1,2,3,4,*} and Gabriele Berg-Beckhoff ⁵</p>	<p>Country and Gender-Specific Achievement of Healthy Nutrition and Physical Activity Guidelines: Latent Class Analysis of 6266 University Students in Egypt, Libya, and Palestine</p>	<p>El Ansari W, Berg-Beckhoff G. Country and gender-specific achievement of healthy nutrition and physical activity guidelines: Latent class analysis of 6266 university students in Egypt, Libya, and Palestine. <i>Nutrients</i>. 2017 Jul 11;9(7):738.</p>

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Samuli Kangaslampi,1 Raija-Leena Punamaki, `` 1 Samir Qouta,2 Marwan Diab,3 and Kirsi Peltonen1	Psychosocial Group Intervention Among War- Affected Children: An Analysis of Changes in Posttraumatic Cognitions	Kangaslampi S, Punamäki RL, Qouta S, Diab M, Peltonen K. Psychosocial group intervention among war-affected children: An analysis of changes in posttraumatic cognitions. Journal of Traumatic Stress. 2016 Dec;29(6):546-55.
Salwa Massad1* , Mehari Gebre-Medhin2 , Omar Dary3 , Marwah Abdalla4 , Steve Holleran5 , Wahida Karmally6 , Paula Bordelois7 , Umayyeh Khammash1 and Richard J. Deckelbaum5	Micronutrient status of Palestinian school children following salt and flour fortification: a cross- sectional study	Massad S, Gebre-Medhin M, Dary O, Abdalla M, Holleran S, Karmally W, Bordelois P, Khammash U, Deckelbaum RJ. Micronutrient status of Palestinian school children following salt and flour fortification: a cross- sectional study. BMC nutrition. 2020 Dec;6(1):1- 8.
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<p>Samir R. Qouta,¹ Esa Palosaari,² Marwan Diab,^{3,4} and Raija-Leena Punamaki</p>	<p>Intervention Effectiveness Among War-Affected Children: A Cluster Randomized Controlled Trial on Improving Mental Health</p>	<p>Qouta SR, Palosaari E, Diab M, Punamäki RL. Intervention effectiveness among war-affected children: A cluster randomized controlled trial on improving mental health. <i>Journal of traumatic stress</i>. 2012 Jun;25(3):288-98.</p>
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Annex 3: Type of consent obtained from adolescents participating in health intervention in the occupied Palestine based on their age group.

Age Group	Type of consent	N (%)
(10 to 14)	Consent from the guardian	3 (15.7%)
	Consent from both students and their parents	2 (10.5%)
	permission of school authorities	2 (10.5%)
	verbal consent from the parents.	1 (5.2%)
(15 to 19)	Consent from the guardian	1 (5.2%)
	Consent from students.	1 (5.2%)
	Not mentioned	1 (5.2%)
(10 to 19)	Not mentioned	4 (21%)
	Consent from the guardian	3 (15.7%)
	Consent from both students and their parents	1 (5.2%)
	Consent from students.	1 (5.2%)

Annex 4: The Published Manuscript.



Sexual and reproductive health interventions geared toward adolescent males: A scoping review

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ARTICLE INFO

Article history:
 Received 27 February 2023
 Revised 5 July 2023
 Accepted 5 July 2023
 Available online xxxxx

Keywords:
 Sexual reproductive health
 Campaign
 Program
 Intervention
 Adolescent
 Male

ABSTRACT

Problem: Male adolescent sexual and reproductive health (SRH) interventions are rare worldwide. The high prevalence of sexually transmitted infections and pregnancies among female and male adolescents worldwide highlights the need for comprehensive interventions that include both genders in the educational process.
Objective: Our main focus is studying and analyzing male-focused SRH interventions globally to include males in evidence-based interventions that improve SRH of adolescent males.

Eligibility criteria: This Review was conducted using the PRISMA extension for scoping reviews. The following databases were searched: PubMed, Embase, Web of Science, Scopus, CINAHL and PsycInfo. Inclusion criteria: 1) No time or date limits; 2) all types of studies; 3) SRH campaigns; 4) males; 5) 10 to 19 years.

Sample: Five thousand and sixty-eight articles were identified and 166 peer-reviewed articles met the inclusion criteria.

Results: Family planning was identified as the primary domain covered for adolescents. While interactive activities was the most common method used to deliver information to adolescents about sexual health, SRH interventions for males were most prevalent in America. While in the Eastern Mediterranean region (EMR), no male interventions were found in our review.

Conclusion: This scoping review emphasizes the need to include adolescent males in sexual and reproductive health interventions, particularly in low- and middle-income countries (LMICs) and the EMR. Policymakers should develop comprehensive programs that address male-specific needs, improve training for intervention providers, and enhance reporting processes to identify gaps and barriers to male inclusion.

Implication: Future research should be directed toward the obstacles that prevent SRH interventions targeting males from being carried out.

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Introduction

Sexual and reproductive health (SRH) services are considered fundamental for everyone (Engel et al., 2019). Adolescents aged 10 to

19 years, comprising 16% of the population worldwide, with 1.3 billion adolescents [The United Nations Children's Fund, 2022], suffer unmet sexual health needs, particularly unmarried sexually active adolescents. In addition, they face different barriers to accessing their sexual health needs, which include a lack of knowledge, the ability to access healthcare services, and doubting the confidentiality of sexual healthcare providers (Patton et al., 2016).

Significant developmental changes occur on various levels during adolescence, including both physical and psychological changes (Dorn et al., 2019). During puberty, curiosity in topics related to sex among adolescents and learning about healthy sexual habits, and sexual needs such as where to seek help and treatment for sexual problems begin to rise (Jayasandara, 2021); it is also during this time that adolescents develop self-awareness and develop distinct identities

Abbreviations: SRH, Sexual and Reproductive Health; EMR, Eastern Mediterranean Region; AFR, Region of the Americas; AFR, African Region; WPR, Western Pacific Region; EUR, European Region; SEAR, South-East Asian Region; LMICs, Low-mortality-income Countries; WHO, World Health Organization; PRISMA-ScR, PRISMA Extension for Scoping Reviews.

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<https://doi.org/10.1016/j.pedn.2023.07.004>

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Please cite this article as: M. Sawalha, A. Shalash, Y. Wahdan, et al., Sexual and reproductive health interventions geared toward adolescent males: A scoping review, *Journal of Pediatric Nursing*, <https://doi.org/10.1016/j.pedn.2023.07.004>

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(Karibeeran & Mohanty, 2019). As adolescence is considered a good time for intervention (Farahani, 2020), it is critical to invest in this critical period to promote the right attitudes and social and behavioural skills. There is a global consensus that improving and protecting adolescent health will benefit adolescents' health in the future and will last for subsequent generations (Patton et al., 2016).

The increasing number of sexually active adolescents cannot be overlooked; this increase can have serious consequences, including the spread of sexually transmitted infections and the high number of early pregnancies (Farahani, 2020). High adolescent pregnancy rates and the spread of sexually transmitted infections are two major problems that low-middle-income (LMICs) settings suffer from (Johnson & Moore, 2016; Kalamar et al., 2016). Moreover, adolescents' access to sexual health education and intervention is weak (Meherali et al., 2021); due to poor SRH knowledge among adolescents and the stigma associated with using sexual health services for unmarried youth, especially in conservative communities (Singh et al., 2014). Many policymakers are cautious about these campaigns and are usually afraid that such campaigns may lead to increased sexual activity and several unwanted consequences. Thus they try to limit their spread and effectiveness which creates a gap between the services provided and the actual needs of adolescents, and failure to reach their optimum goals (Feroz et al., 2021; Salam et al., 2016; Speizer et al., 2003). This indicates the urgent need of those conservative communities for SRH improvements such as secure access to accurate information and practical, safe, and affordable contraception should be provided so that adolescents are empowered and well-informed and can make the right SRH choices (Salam et al., 2016).

Efforts to improve sexual and reproductive health should be directed equally to females and males (Bearinger et al., 2007). Historically, reproductive health has been considered a female's branch of health, and the vast majority of sexual and reproductive programs and interventions, and even family planning services, were exclusively provided for females (Kabagonyi et al., 2014). Involving males in sexual reproductive health interventions is more valuable than targeting females alone, as studies have shown that male's engagement in such interventions can raise the use and the continuation of family planning methods, enhance gender equity and relations, and help making informed decisions, thus enhancing overall sexual health (Davis et al., 2016; Greene et al., 2006; Hartmann et al., 2012).

Due to the significant positive effects of involving males on sexual health in general, it is crucial to run SRH programs that welcome males and provide them with SRH services tailored to their needs. The objective of this review is to inform about the various types of sexual and reproductive health campaigns for males around the world, the domains covered, and the methods used in each campaign in order to find the most effective campaign in raising adolescent males' awareness about sexual and reproductive health.

Methodology

The Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) guidelines was used as a protocol for this scoping review (Tricco et al., 2018), provided as Supplement 1. It was carried out in five phases: (1) identifying the research question using the PICO strategy, (2) conducting the search to identify the relevant studies, (3) including the relevant studies based on the inclusion criteria, (4) charting the data and interpreting it, and (5) summarizing and narrating the results. As our research question was broad and hoped to identify gaps in evidence geared toward the types of sexual reproductive health interventions geared toward adolescent males globally available; a scoping review was found to be the most suitable (Arksey & O'Malley, 2005). No protocol was registered, but a PRISMA flow chart was used to display the number of articles identified, included, and excluded, and the reasons for exclusions.

Search strategy

To identify published data on SRH interventions for adolescent males, a comprehensive literature search was conducted from inception until April 26th, 2022. PubMed, Embase, CINAHL, PsycInfo, Scopus, and Web of science were the electronic databases used. No language or year limitations were used. All screened studies selected for analysis, the reference lists were hand searched for relevant articles.

The search strategy included the following key terms: Sexual reproductive health AND Sexual violence OR sexual harassment OR Premarital sex OR unsafe sex OR Pregnancy OR Sexually transmitted infections OR STIs OR AIDs OR HIV OR HIV testing OR HIV infection OR HIV knowledge OR Condom OR contraceptive OR abstinence OR LGBTQ OR lesbian OR Gay OR bisexual OR transgender OR questioning OR Puberty OR fertility OR Sexual rights OR Awareness OR Literacy OR counseling OR education) AND (Campaign OR Program OR intervention) AND (Adolescent OR Teen) AND (Boy OR male)".

Inclusion and exclusion criteria

Articles were included if they met the following criteria: (1) all types of studies, (2) involved adolescents 10 to 19 years old, (3) was a sexual reproductive health campaign, (4) for males. Our search strategy was not limited by study design, language, or year. Articles were excluded if: (1) not SRH campaign, (2) ages 0-9, 20+, (3) not male oriented, (4) poster, conference abstract or book only.

Selecting studies and collecting data

In order to reduce the risk of reviewer bias, two reviewers independently screened the title and abstract for all articles. Conflicts were resolved by discussion between the two reviewers. A third reviewer was consulted when consensus was not reached. Full-text screening was also done by two independent reviewers; the consensus was reached either by discussions between the two authors or by a third reviewer consultation. Search results were imported on COVidence software (Covidence systematic review software, 2022), a web-based collaboration software platform that streamlines the production of systematic and other literature reviews. Screening and decisions were recorded using the same software.

Data were extracted by two independent reviewers and recorded using Excel (Microsoft Corporation, 2018). The followed data was extracted: Author's name, title, publication year, journal name, country, study design sample size, age, target population, setting of the campaign type of the campaign, the domain of the intervention, subtopics, campaign's duration, campaign's description campaign's methods, outcome of the campaign, assessment of the campaign, challenges facing the campaign, limitations. Missing data was recorded as 'not available'. In cases of discrepancies, the consensus was reached by consulting a third reviewer.

Topics covered in each campaign were divided in accordance with the comprehensive sexuality education programs implemented by the United Nations Population Fund UNFPA, which included the following key concepts: SRH, sexuality and sexual behavior, the human body and development, skills for health, violence and staying safe, understanding gender, "values, rights, and sexuality, relationships (United Nations Population Fund, 2021). The premise of these initiatives is that young people should have access to information that will allow them to make informed choices regarding their sexual health. Narrative synthesis and an explanatory frequency analysis was performed on the extracted data using SPSS software (IBM Corp, 2019).

Results

The database search resulted in 6355 articles from which 1375 duplicates were removed. Hand search resulted in 137 articles, from

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which 49 duplicates were removed. A total of 5068 articles were screened. In the first stage of screening -Title and abstract screening- 4302 studies were excluded; 715 studies were assessed for full-text eligibility by two reviewers using the following exclusion criteria; not campaign, intervention, program ($n = 316$), ages 0-9, 20+ ($n = 110$), posters, abstracts, books ($n = 66$), Age group not specified ($n = 26$), full text not found ($n = 19$), campaign exclusively for females ($n = 8$) and not sexual reproductive health-related ($n = 4$), resulting in 549 articles that were excluded. All of these results can be found in (Fig. 1: PRISMA flow diagram).

Characteristics of included studies

Characteristics of the included studies are shown in Table 1. Thirty-five percent of the studies were published between 2013 and 2018. Most were conducted in the region of the Americas (AMR) (47%), as defined by the World Health Organization (WHO) region's division. In contrast to the EMR, where no studies met our inclusion criteria. Additionally, half of the studies took place in high-income countries (51.2%), and only a few studies were conducted in low-income countries (8%). More specifically, the United States of America (USA) accounted for (36.7%) of the 166 studies, which is the largest number of studies from one country. Overall, only 4.8% of studies were exclusively

tailored to males. The rest were for both males and females together. As for the targeted age groups, the population included individuals aged between 10 and 19. Only (12.7%) of the campaigns targeted the younger age group (10-14) exclusively, (32.5%) were geared toward the older age group (15-19) years old, and (42.8%) of the studies were geared toward (10-19) years old together.

Domains covered in SRH campaigns/programs

The domains covered in the campaigns, were defined according to the comprehensive sexuality education as defined by UNFPA (United Nations Population Fund, 2021). Most studies covered different domains, and for each domain, several subtopics were identified. 41.5% of the articles addressed only one domain, 36.7% discussed two domains, 19.8% discussed three domains, and 1.8% discussed four domains in their interventions. Subtopics are identified in Table 2. More than three-quarters (87.9%) of the studies had family planning domain, which discussed condom use specifically, contraception in general, safe sex practices, premarital screening awareness, safe motherhood and parent-hood, knowledge of clinic services, and availability of male reproductive health services. The most covered subtopics in this domain were birth-control methods (64.4%) and sexually transmitted infections (62.1%). Family planning was the most covered domain for smaller age

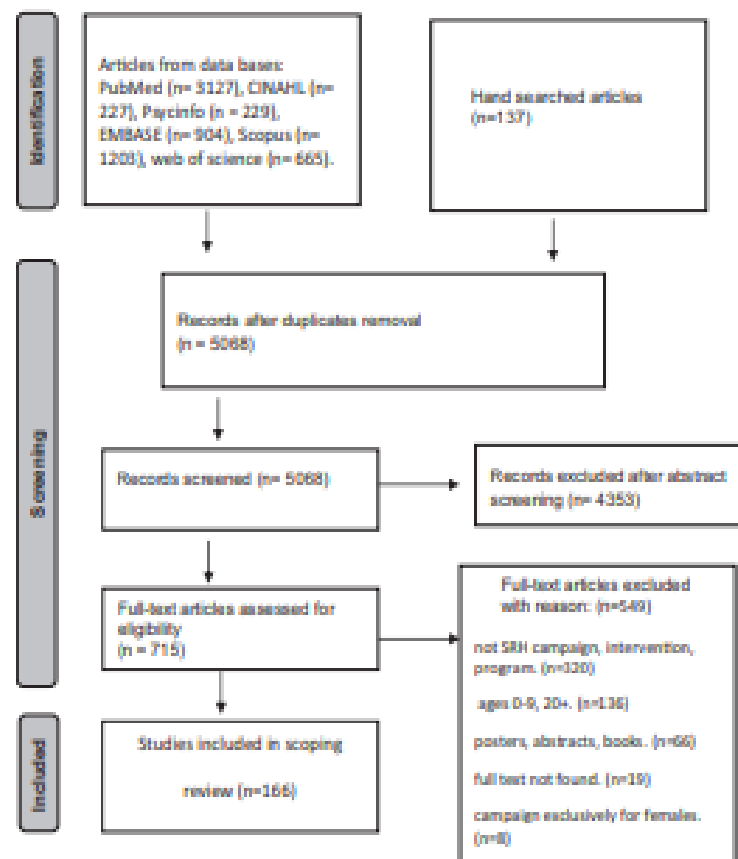


Fig. 1. PRISMA flow diagram of study selection.

A total of 166 articles were eligible for extraction; most of these studies used a quasi-experimental design, which used pre and post-tests to evaluate the effectiveness and the success of the interventions used in the campaigns.

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Table 1
Characteristics (n = 366).

	Number (%)
Publication year	
1980-1999	18 (10.8%)
2000-2007	27 (16.3%)
2008-2012	38 (22.6%)
2013-2018	59 (35.5%)
2019-2022	24 (14.5%)
WHO region	
Region of the Americas	78 (47%)
African Region	35 (21.3%)
Western Pacific Region	19 (11.4%)
European Region	18 (10.8%)
South-East Asian Region	16 (9.6%)
Age groups	
10-19	71 (42.8%)
10-14	21 (12.7%)
15-19	54 (32.5%)
Target population	
Males and females	157 (95.2%)
Males	8 (4.8%)
Main Domain	
Family planning	146 (87.9%)
Sexual health	52 (31.3%)
Life-skills	48 (28.8%)
Gender identity and rights	42 (25.3%)
Substance use	12 (7.4%)
Methods Used in Campaigns/Intervention	
Interactive activities	102 (61.4%)
Lectures	59 (35.6%)
Audio and visual aids	48 (28.9%)
Peer education	26 (15.6%)
Mass methods	22 (13.2%)
Health services promotion	2 (1.8%)
Health services	2 (1.2%)

groups (10-14 years) and both age groups (10-19 years) in all countries.

Sexual health was the second domain identified in (31.3%) of the studies and the most highlighted domain for the younger age group. It involved the anatomy and physiology of adolescents, which was covered in (23.5%) of the articles, and general knowledge of health in (7.2%) of them. Sexual health subtopics discussed reproduction,

Table 2
Subtopics covered in sexual reproductive health campaigns (n = 166).

Topics and Subtopics	Number (%)
Family planning	146 (87.9%)
Birth-control methods	107 (64.4%)
STIs	103 (62.1%)
Pregnancy	18 (10.8%)
Health services	9 (5.4%)
Sexual health	52 (31.3%)
Anatomy and physiology	39 (23.5%)
General knowledge	12 (7.2%)
Life-skills	48 (28.8%)
Social skills	29 (17.5%)
Negotiation skills	12 (7.2%)
Adolescent-parent communication	9 (5.4%)
Leadership skills	4 (2.4%)
Goal setting	1 (0.6%)
Economic skills	1 (0.6%)
Gender-identity and rights	42 (25.3%)
Identity	22 (13.2%)
Violence	12 (7.2%)
Rights	11 (6.6%)
Stigma	5 (3%)
Values	2 (1.2%)
Sexuality	2 (1.2%)
LGBT-specific education	1 (0.6%)

reproductive physiology, reproductive system anatomy, adolescent health, and puberty changes.

Life-skills was also an important domain of education for adolescents in (28.8%) of the campaigns. It consisted mainly of social skills (17.5%), negotiation skills (7.2%), adolescent-parent communication (5.4%), leadership skills (2.4%), and both economic skills and goal setting (0.6%). In this domain, several subtopics were taken into consideration, such as adolescent self-esteem, life goals, life responsibilities, developing healthy relationships, and decision-making. In addition, negotiation skills included refusal skills, negotiating condom use, refusing unprotected sex, and maintaining decisions.

The broadest domain, gender identity and rights, was covered in (25.3%) of the articles. It discussed identity, positive body image, and gender roles. (13.2%) of the articles covered the topic of identity which highlighted self-awareness, gender identification and sex roles. Violence was covered in (7.2%) of the articles which discussed sexual violence and sexual abuse. Human rights were explained in (6.6%) of the articles. Human rights included gender equity, sexual and reproductive rights, and how to protect personal rights. Another subtopic under this domain was stigma, which discussed the taboos and the disgrace people suffer with if diagnosed with STIs, specifically HIV in some cultures. Furthermore, values and sexuality were covered in (1.2%) of the articles each. LGBT-specific education was the least covered domain and was discussed only in one article; where a campaign was held in the USA targeting older age groups of males and females together. Finally, only a few studies (7.4%) concentrated on substance use - alcohol and smoking - awareness.

Methods employed in SRH campaigns/programs

A single campaign could use different methods to deliver the campaign's message. More than half (61.7%) of the methods used were interactive techniques that included discussions, games, stories, role-playing, simulation, demonstration, homework, and individual counseling. Interactive techniques were the most frequently used method in campaigns in all countries, especially for older age groups (15-19 years). Lecturing was also an important method employed (37.6%). It was the primary method used in teaching the younger age group of adolescents (10-14 years). Furthermore, 28.9% used audio and visual aids, which consisted of text messages, presentations, booklets, brochures, posters, videos, and films. Further, (15.6%) of the articles utilized peer education, where some students (peers) were well-trained to become peer-educators. The mass method, which includes web-based modules and videos and campaign promotion through social media, for example, using Facebook pages to promote and educate and using TV episodes for campaign promotion, was not commonly used in such interventions (13.2%).

Regarding the most effective method used for improving sexual behavior, interactive activities was responsible for (63.3%) of the improved sexual behavior outcome and (61.9%) of the increased knowledge outcome. In the previous outcomes, lecturing was the second most effective method, resulting in (34.2%) improved sexual outcomes and (37.1%) increased knowledge outcomes. The use of mass methods was the least effective, accounting for only (13.8%) of the improved sexual behavior outcome and (10.5%) of the increased knowledge outcome. When discussing methods and outcomes, keep in mind that each study used multiple methods and multiple outcomes, each of which was measured separately.

Assessment of campaigns/program outcomes

To assess the campaigns' efficacy in terms of both their content and their execution, several outcomes were evaluated. Sexual behavior (63.8%) and knowledge (63.2%) were the most critical measures calculated. Followed by communication about sex (12.6%), personal attitudes

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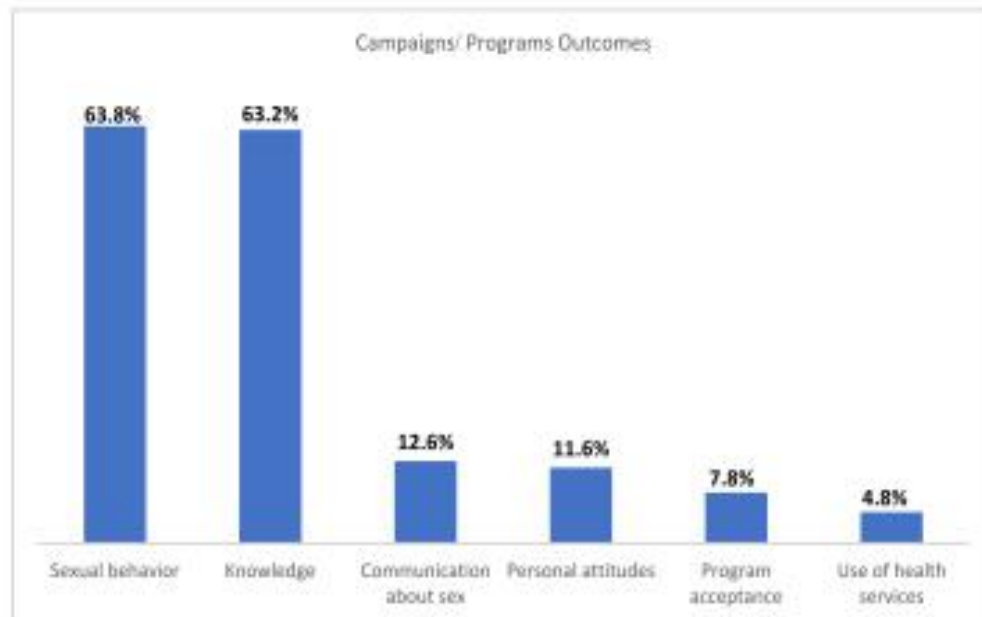


Fig. 2. The percentage of outcomes used to measure the effectiveness of sexual reproductive health programs campaigns.

(11.6%), program acceptance (7.8%), and use of health services (4.8%). Campaign outcomes reported are shown in Fig. 2.

Discussion

This scoping review described adolescent male SRH awareness programs. It also discussed the program interventions' efficacy, contents, domains, and methods. This review found a lack of awareness programs for young males (Dinamarira et al., 2021). Lack of campaigns and awareness programs and low male inclusion are due to several factors. First, males are difficult to convince of the importance of SRH and that it must be a shared responsibility with their partners (Loffi et al., 2022). Furthermore, studies have shown that one of the major barriers to male's participation in SRH interventions is their inadequate knowledge about the risks of STIs and their resistance to gaining new knowledge in SRH domains (Rahimi-Naghani et al., 2016), influencing their participation and decisions about family planning. This effect is amplified due to power dynamics in which male's decisions and beliefs are prioritized over their partner's (Lantieri et al., 2022). Also, males have trouble discussing sexual issues (Camlin et al., 2016). This could be attributed to traditional masculinity beliefs that views STIs and sex as disgraceful, which have been found to influence males' decisions and care-seeking (Ammi et al., 2022). Males also think health care providers should lead SRH interventions because they're skilled at it, preventing them from taking the lead in the participation in such interventions (Same et al., 2014).

Our review identified family planning as the most used domain in SRH interventions. This domain mainly discussed STIs, and birth-control methods. The high prevalence of STIs among youth in general (Dehne & Kiedner, 2001), and among LMICs youth specifically (Mayaud & Mabey, 2004) -For example, nearly 80% of HIV-positive Africans are between 15 and 24 years of age (Gallant & Matlick-Tyndale, 2004; Kalichman et al., 2007)- emphasizes the importance of family planning education as a primary prevention method that can help reduce the incidence of STIs.

Our study found that the different SRH domains used, raised youth awareness of SRH and improved their sexual behaviors. However, those domains concentrated on biological aspects with a less focus on more sensitive topics like safe abortion (Casey, 2015; Chandra-Mouli et al., 2015). The difficulty program developers and decision-makers have in including such topics and being open in adolescent interventions may stem from the stigma associated with adolescent pregnancy, especially in low-income countries, as well as religious considerations and various cultural barrier (Camlin et al., 2016).

As for high-income countries, USA and UK mainly concentrated on family planning due to high STI and teenage pregnancy rates (Stanger-Hall & Hall, 2011). In the USA alone, there are almost ten million new teenage pregnancy cases yearly (Centers for Disease Control and Prevention, 2013). Additionally, studies have shown that the age for marriage has increased, creating a gap between puberty and marriage, which increases reckless sexual activity and multiple sexual partners, making adolescents more susceptible to STIs (Kirby, 2000). Family planning raised awareness about STIs and teen pregnancy by identifying birth-control methods, especially male condoms. Condom use and its benefits were shown in several interventions. Some interventions even provided free of charge condoms to encourage birth control methods use and reduce the negative effects of unprotected sex (MacPhail & Campbell, 2001; Renaud et al., 2009).

In terms of the most commonly used methods in SRH awareness campaigns, interactive techniques such as discussion groups, drama sessions, and acting lessons were the most commonly used. It aimed to increase adolescent positive participation and engagement in the available activities. This method reported improved sexual knowledge and behavior, according to our review and the literature (Ma et al., 2022). On the other hand, mass methods-TV, radio, and others-improved knowledge and health promotion, but they were the least used (Pires et al., 2019). The reason behind this could be attributed to the poor conditions in LMICs that force them to prioritize traditional, and cheaper methods. Also, the "culture of silence" and sociocultural

constraints on discussing sexual topics make mass methods of SRH awareness complicated (Najafi-Sharjabad & Haghghatjoo, 2019).

Each program used a variety of SRH domains and methods, making it difficult to determine which method was used for which domain, especially since studies did not provide this information. However, using multiple domains made the programs more comprehensive and effective at improving sexual health knowledge and behavior. Comprehensive sexuality education has been found to be very effective, so the more comprehensive the intervention, the more beneficial it is to the participants (Kernigisha et al., 2019).

Sexual and reproductive health interventions are scarce in LMICs and low-income countries (Desrosiers et al., 2020a; Fantaye et al., 2022). Almost half of the studies, as our findings show, were conducted in high-income settings. While only (6.0%) of SRH interventions were implemented in low-income countries, (25.9%) were implemented in LMICs. Most of those countries are in conflict and lack security and trained health workers, which may explain the low number of interventions as governments in conflict zones don't prioritize SRH interventions, a lack of skilled teachers, other resources, and funding has hampered SRH intervention (Chavala et al., 2022). SRH interventions in conflict-affected settings should be reported more, as there is currently a general absence of reporting (Munyuzangabo et al., 2020).

The growing rates of STIs among adolescents worldwide, indicate the high number of wrong sex practices (Mazibuko et al., 2023), necessitating male-targeted interventions for maximum reach effectiveness. This requires up to date methods that are acceptable among youth (Aitile et al., 2021). One suggestion is using mobile applications for education and consultation on sexually related matters. Using technology can reach youth and involve them in SRH, as adolescents are usually excited to use new creative techniques. In addition, most adolescents have regular access to technology and smartphones, even in LMICs, smartphone use has increased rapidly in the last years (Cornelius et al., 2012; Feroz et al., 2021). It can also overcome adolescent concerns about stigma, confidentiality, and privacy when sharing private sexual information. Thus, for this idea to reach optimal success, it has to be culturally sensitive and socially appropriate for adolescents (Arnaigo et al., 2014).

It was notable that none of the included studies reported on campaigns in the EMR. Cultural barriers like religious beliefs, considering care-seeking behavior abnormal, especially for males, and viewing clinics as places that are particular for females and children may explain the lack of SRH interventions in this area (Carlin et al., 2016; Drake et al., 2015). Furthermore, it is difficult for EMR countries with such conservative cultures to engage in gender-related programs. This engagement requires massive inter-sectoral efforts and funding, which generally needs to be improved in those countries' public sectors because a lack of funding forces them to prioritize and focus on female's health, which suppresses the required change (Beia et al., 2021). Furthermore, teachers in the EMR are often unprepared and uncomfortable discussing such sensitive topics (Pokharel et al., 2006), resulting in partial implementation of adolescent SRH interventions (Chandra-Moali et al., 2015). However, it is important to stress that the aforementioned requirement for reporting should be taken into account when studying SRH intervention in EMR countries, as interventions may be carried out but not reported (Munyuzangabo et al., 2020; Warren et al., 2015). This is primarily due to resource constraints, resulting from unstable politics and economy in those settings living (Singh et al., 2018), forcing them to prioritize service delivery over awareness campaigns, which makes conducting and documenting such campaigns impossible (Desrosiers et al., 2020b).

Strengths and limitations

This scoping review provides a comprehensive overview of global male-inclusive SRH programs, as well as identifying the most commonly SRH domains addressed and used methods to communicate these domains for adolescent males. Yet, because this scoping review only used peer-reviewed articles, there was a dearth of resources,

particularly in the EMR, which lead to a scarcity of sources providing information about potential campaigns that could be conducted in those regions but reported in grey literature.

Implications to practice

This scoping review highlights the need for comprehensive SRH programs for adolescent males, particularly in LMICs and the EMR. The review suggests that efforts should be made to include males in SRH interventions, increase their awareness and participation, provide training to staff and teachers delivering these interventions, and improve the reporting process for SRH interventions in LMICs and humanitarian settings. Implementing these recommendations can lead to more effective and inclusive SRH interventions, ultimately improving the SRH outcomes of adolescent males.

Conclusion

This scoping review provides an overview of the approaches and topics covered in interventions directed toward adolescent males around the world. It also details the primary features of these interventions, including where they were held, who they were aimed at, and how old their intended recipients were. The findings of this review can assist policymakers in LMICs, particularly those in the EMR, in developing a comprehensive program that incorporates the methods and domains that have been found to be effective, particularly for males, in order to maximize the benefit for all. Efforts should be directed toward greater inclusion of males in SRH interventions, particularly in the EMR, where such interventions for males were found to be lacking. Males should also be made more aware of the importance of participating in such interventions and encouraged to do so. More training should be provided to the staff and teachers in charge of providing such interventions in order to improve their abilities to teach such sensitive topics and deal with teenage participants who can be difficult to deal with. Finally, improving the reporting process of SRH interventions in LMICs and humanitarian settings should be prioritized, as this allows future research to identify gaps and barriers to including males in those interventions, thereby improving SRH in those settings.

Authors contributions

All authors discussed and developed the research question. Mariam Sawalma: built the search strategy, performed this in all databases and wrote first draft of the manuscript, was an independent reviewer for the first selection process at all stages of the study and revised the draft manuscript, and performed data extraction. Aisha Shalash, Yasmeen Wahdan, Maysa Nemer and Niveen Abu-Rmeileh: were the independent reviewers for the first selection process at all stages of the study and revised the draft manuscript. Hala Khalawi and Bassel Hijazi: performed data extraction. All authors read, revised all drafts and approved the final manuscript.

Ethical consideration

Not applicable.

Funding

This study was funded by International Development Research Centre, Canada (ID number 109011-001).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pedn.2023.07.004>.

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Annex 5: Article two: Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Under the title of Abstract. Page 1.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Under introduction section. Paragraphs 1 to 4. Page 3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Paragraphs 5 and 6. under the introduction section. And Paragraph 1 under methodology section Page 4.
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Not applicable, scoping review process was included in the manuscript, review protocol was not registered due to review nature.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Paragraph 2 under Methodology section. Page 5.
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Paragraph 2 under Methodology section. Page 5.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Paragraphs 3 in page 5. Under methodology section.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Under Methodology section. Paragraphs 4 and 5. Page 5.
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Under Methodology section. Paragraphs 6 and 7. Page 6.
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Under Methodology. Paragraphs 2 and 4. Page 5.
Critical appraisal of	12	If done, provide a rationale for conducting a critical	Not applicable.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
individual sources of evidence§		appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Peer-reviewed articles were appraised for appropriateness.
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Under Methodolgy section. Paragraphs 6 and 7. Page 6.
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Under Results section Paragraphs 1 and 2. Figure1. Pages 6 and 7.
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Results section. Paragraphs 3 to 10. Tables 1 and 2 And figure 2.
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable.
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Results section. Paragraphs 3 to 10. Tables 1 and 2 And figure 2 Pages 9 to 12.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Results section. Paragraphs 3 to 10. Tables 1 and 2 And figure 2. Pages 9 to 12.
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and	Under Discussion section. Paragraphs 1 to 9. Pages 13 to 15.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	Under Strengths and Limitation section. Page 16
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Under Conclusion section. Page 16
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Under funding section page 16.

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: [10.7326/M18-0850](https://doi.org/10.7326/M18-0850).