

BMJ Open Adolescent health research and initiatives in the occupied Palestinian territory: a scoping review

Mariam Sawalma ^{1,2}, Aisha Shalash ^{1,3}, Beesan Maraqa ^{4,5}, Majd Quran,⁶ Khalifa Elmusharaf,⁷ Niveen M E Abu-Rmeileh^{1,8}

To cite: Sawalma M, Shalash A, Maraqa B, *et al*. Adolescent health research and initiatives in the occupied Palestinian territory: a scoping review. *BMJ Open* 2025;**15**:e082563. doi:10.1136/bmjopen-2023-082563

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2023-082563>).

Received 27 November 2023

Accepted 28 February 2025



© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

¹Institute of Community and Public Health, Birzeit University, Birzeit, Palestine

²Palestinian Medical Relief Society, Ramallah, Palestine

³School of Medicine, University of Limerick, Limerick, Ireland

⁴Faculty of Medicine and Health Science, Al-Najah National University, Nablus, Palestine

⁵Ministry of Health, West Bank, Palestine

⁶Juzoor for Health and Social Development, Ramallah, Palestine

⁷Institute of Applied Health Research, University of Birmingham Dubai, Dubai, UAE

⁸College of Health Sciences, Qatar University, Doha, Qatar

Correspondence to

Dr Mariam Sawalma;
mariamsawalma95@gmail.com

ABSTRACT

Objective Adolescence is a period characterised by profound changes that warrant special attention, particularly for adolescents living in conflict-stricken regions. The dearth of available information regarding observational health research and interventions in the occupied Palestinian territory emphasises the need for a comprehensive examination of all accessible data. The aim of this review is to conduct a thorough analysis of the existing literature and initiatives focusing on adolescent health in the occupied Palestinian territory.

Design Scoping review using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) framework.

Data sources PubMed, Embase, Web of Science, Scopus, CINAHL and PsycINFO, along with grey literature, were searched for the period between 2012 and 2023.

Eligibility criteria for selecting studies Research studies, programmes or interventions targeting adolescents aged 10–19 years, conducted in the occupied Palestinian territory, and published between 2012 and 2023 were considered. Both peer-reviewed articles and grey literature were included.

Data extraction and synthesis Two independent reviewers conducted abstract and full-text screening of the selected articles. Discrepancies were resolved through discussion, with a third reviewer consulted when necessary. Data extraction was performed using Excel software by two independent reviewers. Extracted data were categorised as either intervention or observational research. For analysis, the extracted data underwent an explanatory frequency analysis using SPSS software.

Results Our search yielded 114 research projects and 19 interventions from peer-reviewed and grey literature searches. The most frequently addressed topic was non-communicable diseases, with health awareness being the most common method employed in interventions. The studies targeted both male and female participants, with a particular focus on adolescents aged 10–19 years. The majority of the included studies received funding from international sources and were conducted by foreign and local researchers.

Conclusion This review sheds light on the current framework of adolescent health interventions, identifies areas where research is lacking and advocates for evidence-based practices to enhance the well-being of Palestinian adolescents. Future interventions should encompass the younger age group, and research should

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The systematic approach of this review allowed for the inclusion of diverse studies that are often overlooked, providing a comprehensive analysis of the available literature.
- ⇒ The inclusion of both grey and published literature enhanced the comprehensiveness of the review, capturing a wider range of evidence on adolescent health initiatives and research.
- ⇒ The limited availability of published data restricted the scope of included studies, as many relevant findings were only available in conference abstracts or unpublished organisational reports.
- ⇒ The low documentation of interventions by national organisations working in the field gives the impression that interventions are not conducted extensively, while, in reality, numerous initiatives are being conducted in the field.

strive to provide precise information for each age group independently.

INTRODUCTION

Adolescents aged 10–19 years comprise a significant portion of the world's population.¹ During adolescence, a transitional phase from childhood to adulthood, young individuals experience various changes that demand focused attention to their physical, mental and social needs.² It is important to note that many adult diseases and behaviours have their roots in adolescence, and addressing their risk factors during this stage can prevent these issues.³ Consequently, adolescence is considered a golden period for interventions to enhance quality of life and foster a healthy society.⁴

In recent years, low-income and middle-income countries have seen a substantial increase in their adolescent populations.⁴ In the Arab region, adolescents accounted for one-third of the population in 2023.⁵ However, the growth in the size of the adolescent population has not been matched by

a corresponding increase in the quantity, diversity and accessibility of services designed to meet their health needs.⁶ It is important to highlight that disparities exist within the Arab world, particularly between wealthier nations in the region and those with lower and middle incomes, who also face armed conflicts, poverty and unemployment. The consequences of all of this are reflected in the health outcomes of Arab adolescents.⁷ Health research in the region is often generalised and not tailored to adolescents' unique needs, leading to less effective interventions.⁶ Moreover, the fragmented nature of health initiatives across the Arab world leaves adolescents—especially the most vulnerable—without the focused attention they require.⁸

In Palestine, nearly half of the population is under 18 years, placing adolescent health at the forefront of public health priorities.⁹ The ongoing political conflict has deeply impacted the socioeconomic and mental well-being of Palestinian youth, contributing to health disparities.^{10–11} Additionally, the dispersed living conditions across refugee camps, rural areas and urban centres have created barriers for accessing essential healthcare.^{12–13}

For Palestinian adolescents, these challenges are compounded by limited resources, movement restrictions and a fragmented healthcare system, which includes the Ministry of Health, United Nations Relief and Works Agency for Palestine Refugees in the Near East, non-governmental organisations (NGOs) and private sector actors.^{14–16} This fragmentation makes it difficult to provide integrated and comprehensive health services, especially in areas such as sexual and reproductive health and mental health.¹⁷ In Gaza, restricted access to education and healthcare only intensifies these difficulties, leaving adolescents more vulnerable to poor health outcomes.^{15–18} Addressing these issues is not only critical for improving adolescent health but also for safeguarding the future economic and social development of the region.¹⁹ Therefore, targeted research and intervention strategies are vital to assess adolescents' health needs, identify gaps in existing services and ensure that interventions are grounded in evidence-based practices.²⁰

While significant research has been conducted on topics like mental health, reproductive health, nutrition and substance use among Palestinian adolescents,^{21–23} there remains a huge deficit of comprehensive studies that evaluate the effectiveness of current campaigns and interventions. Bridging this gap is essential for developing tailored policies and interventions that directly address the health needs of Palestinian adolescents and avoid unnecessary duplication of efforts.⁶

METHODOLOGY

This scoping review's methodological process followed the framework proposed by Arksey and O'Malley.²⁴ The steps followed in this review were: (1) composing the research question, (2) identifying relevant studies, (3) selecting studies for inclusion, using specific inclusion

criteria, (4) data extraction and (5) data analysis, which consists of collating, summarising and reporting the findings. Scoping reviews allow for a more general question and a broader exploration of the topic in studies with diverse methodologies.²⁵ Given the broadness of the adolescent health initiatives, the topic under study, and the dearth of previous information related to it in the occupied Palestinian territory (oPt), a scoping review was the optimal approach for collecting, synthesising and analysing the existing literature on the subject.

This scoping review used the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) extension for Scoping Reviews guidelines²⁶ as a protocol, provided as online supplemental appendix A. Although no protocol was registered, the study used a PRISMA flow chart to illustrate the number of identified, included and excluded studies and provided rationales for exclusions.

Research question

This scoping review aimed to address the following research question: 'what are the programmes, interventions and research of adolescents' health conducted in Palestine?' This was developed to map the scope of adolescent health initiatives in the oPt, providing a comprehensive overview of the available literature, including both peer-reviewed articles and grey literature.

Study identification: search strategy

A comprehensive search of peer-reviewed articles in PubMed, Embase, Cumulated Index in Nursing and Allied Health Literature, 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 oPt, peer-reviewed articles and grey literature were searched from 2012 to 23 March 2023. A 10-year period was decided to be the most appropriate to capture the most recent and relevant literature on the topic. The grey literature was systematically and purposively searched by reviewing the websites of major organisations involved in adolescent health in the oPt, including reports, policy briefs, programme evaluations and organisational publications. However, internal documents, unpublished data and non-publicly accessible reports were excluded from this review. The database search used the following keywords, adjusted according to each database requirements: Adolescents OR youth OR teenage AND Health AND Palestine OR Gaza OR "West Bank" OR "East Jerusalem." The full search strategy is provided as online supplemental appendix B.

Study selection: inclusion 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.²⁷ 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, programme or intervention, (2) targeting adolescents aged 10–19 years, (3) conducted in the oPt and (4) published between 2012 and 2023.

Articles were excluded if they met one of the following criteria: (1) target population ages >19 years or <10 years, (2) published before 2012, (3) intervention, programme or research outside the oPt and (4) abstract, book, editorial or conference proceeding.

Data extraction

Two independent reviewers extracted data using Excel software.²⁸ All the extracted data were analysed 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 programme. In contrast, an observational study refers to studies that include data collection and analysis done without providing interventions or services from the researchers. For interventions, the following data were extracted: authors, title, type of document, type of research used, the time this research was conducted, localisation (national or subnational), publication year, sample size, study design, age of participants, gender of participants, topics discussed, subtopics, services delivered, who was involved, types of services provided, service delivery location, methods for providing services, funding source, who conducted the research: a local researcher or a foreign researcher and which organisations commissioned and conducted the research.

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

Data analysis

The extracted data underwent an explanatory frequency analysis using SPSS software.²⁹ However, our primary focus was on providing a narrative description of the main topics addressed by the initiatives, the methods employed to promote health, the localisation of the initiatives, the funding sources and all other relevant information that contributes to an accurate representation of the current situation in the oPt. Of note, the coverage percentage for each main topic was calculated based on the total number of topics, rather than the total number of articles, as some articles covered multiple topics.

Ethical considerations

Our scoping review adhered to ethical principles by using only publicly available, previously published studies, ensuring no direct involvement of human participants or use of identifiable data. According to institutional and international guidelines, formal ethics approval was not required for this review due to its reliance on secondary data.

Patient and public involvement

Patients and/or the public were not involved in this study.

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 three articles that met the inclusion criteria.

We also conducted a comprehensive search of the grey literature by examining websites belonging to organisations that specialise in adolescent health in Palestine. We screened the executive summaries or abstracts of articles, briefs, reports, rapid assessments and annual reports in these websites and then conducted a subsequent screening of the full text of those documents. After this process, we identified 19 documents that met our inclusion criteria.

Full results can be seen in [figure 1](#).

Adolescent observational health research in Palestine Characteristics

In our review of 133 studies, we found that 114 were categorised as observational health research, while 19 were interventions. Among the observational health research focused on Palestinian adolescents, 35% were conducted between 2012 and 2015, 32.5% between 2016 and 2019, and 32.5% between 2020 and 2023. The localisation of observational health research varied, with 21.9% conducted at a national level encompassing both Gaza and the West Bank, while the remaining 78.1% were carried out in either Gaza or the West Bank individually.

Demographics of the target groups

The observational health research in Palestine addressed three distinct age groups: Group 1 (aged 10–14 years), Group 2 (aged 15–19 years) and Group 3 (aged 10–19 years). Most studies (64.9%) focused on Group 3, 19.3% targeted Group 1 and 15.8% focused on Group 2. Regarding gender, the majority (93%) targeted male and

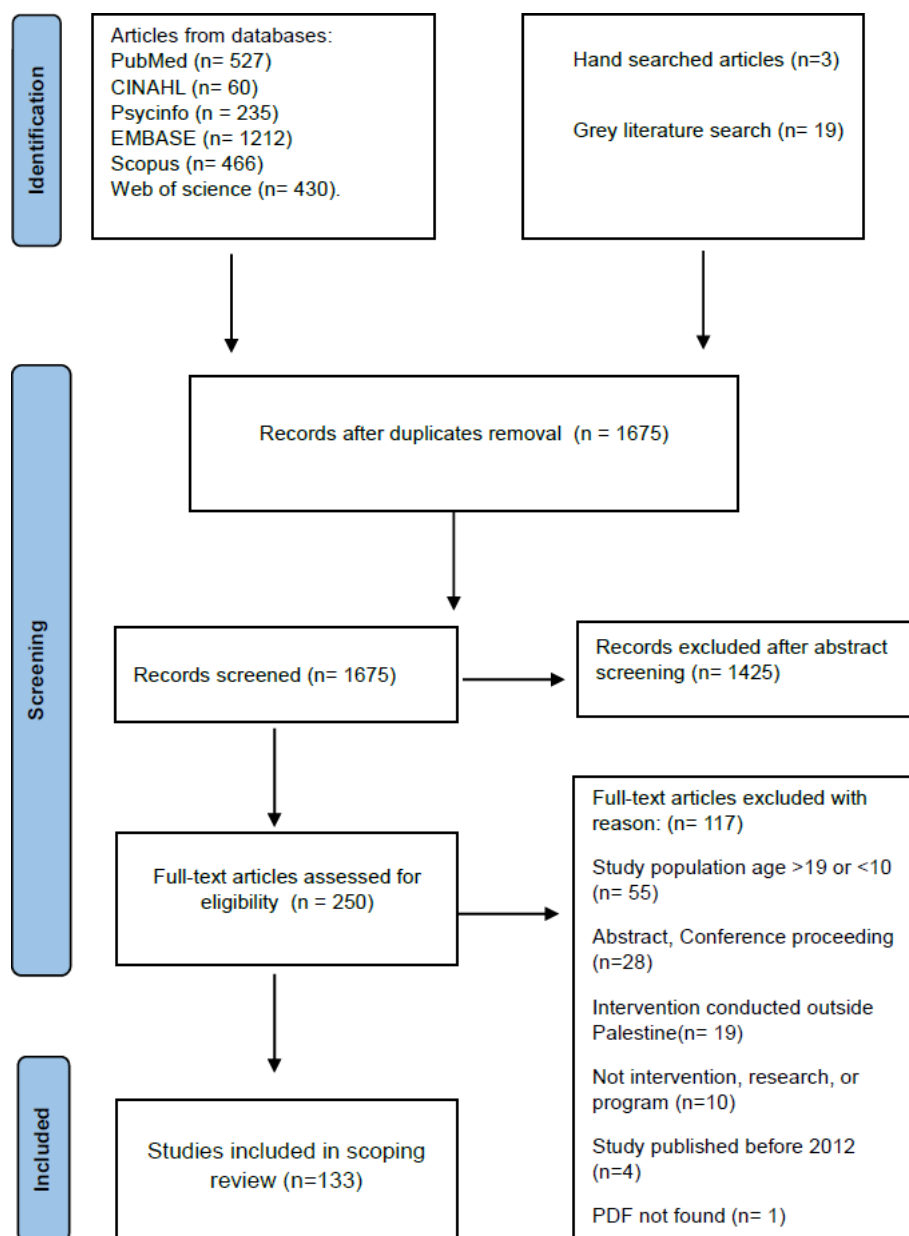


Figure 1 The Preferred Reporting Items for Systematic reviews and Meta-Analysis flow diagram. CINAHL, Cumulated Index in Nursing and Allied Health Literature.

female participants, 4.4% specifically focused on female participants and 2.6% targeted male participants.

Main topics covered

Identification of topics and subtopics covered in studies and interventions conducted in Palestine was based on the guidelines of ‘adolescent health measurement areas’.³⁰ The primary topics covered in the studies were diverse, with most studies encompassing multiple topics and subtopics.

The main topics included:

- Non-communicable diseases (29%): this category included subtopics such as depressive disorders (5.2%), post-traumatic stress disorder (PTSD) (9.7%), anxiety disorders (4.5%), stress/pressure (3.6%),

self-harm (2.4%), oral conditions (2.4%), and eye diseases and disorders (0.4%).

- Health behaviours and risks (25.5%): this category included subtopics such as dietary behaviour (8.9%), tobacco use (6.5%), physical activity (4.1%), weight status (3.7%), substance use (3.2%), alcohol use (2.8%), sexual health (2.4%), bullying (1.6%), menstruation (0.8%) and sedentary behaviour and sleep (0.4%, each).
- Injuries (18.2%): it mainly covered interpersonal violence (12.6%).
- Subjective well-being (10.2%): it includes affect/feeling/emotion (7%), social connectedness (2.4%) and life satisfaction (0.4%).

- Social, cultural, economic, educational and environmental determinants of health (8%): it consists of education level/schooling status (2%), being part of a vulnerable group (1.6%), income level and poverty (1.2%), safe water source/sanitation and access to the handwashing facility (WASH) (0.8%), gender (0.8%), child labour (0.4%) and child marriage (0.4%).
- Communicable, maternal, perinatal and nutritional conditions (6.3%): it includes COVID-19 (3.2%) and iron deficiency covered (1.2%).
- Systems' performance and interventions (2.8%): it covered health service availability and access (1.2%), health service utilisation and barriers (0.8%) and health education (0.4%).

Who conducted the research?

Most studies were conducted by a combination of local and foreign researchers, accounting for 56.1%. Local researchers carried out 25.5% of the studies, while foreign researchers conducted 14.9%. The remaining 3.5% were grey literature studies with unidentified researchers.

Funding source

Adolescents' research in Palestine was mainly funded by international sources (32.5%), with 8.8% being regionally funded. 41.2% of the studies did not mention the funding source, and 17.5% received no funding. Characteristics and demographics are listed in [table 1](#).

Adolescent interventions in Palestine

Characteristics and demographics

Nineteen health interventions for adolescents were identified in Palestine. Of these, 10 were conducted during the period spanning from 2012 to 2015, four took place between 2016 and 2019, while the remaining five were implemented from 2020 to 2023. The majority of these health interventions were primarily implemented at the subnational level, with 17 interventions conducted specifically in Gaza or the West Bank. The remaining two interventions took place at the national level. Regarding target demographics, most interventions (n=18) were designed for both male and female participants, with only one intervention exclusively targeting female participants. The primary focus regarding age groups was on two specific ranges: 10–14 years and 10–19 years, both equally addressed in 16 studies (eight studies for each category). The age group of 15–19 years was the specific focus of three studies.

Main topics covered

Several of the interventions addressed multiple topics, with non-communicable diseases being the primary focus in nine of these interventions. These non-communicable diseases include PTSD, depressive disorders and anxiety disorders. Health behaviours and associated risks were the secondary focus in six interventions, which encompassed dietary behaviours, sexual health and tobacco use. Subsequently, subjective well-being emerged as the subject of interest in five interventions, encompassing aspects such

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 (years)	
10–19	74 (64.9%)
10–14	22 (19.3%)
14–19	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)	
Non-communicable diseases, including mental health	51 (29%)
Health behaviours 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%)

as affect, feelings, emotions, 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 (10–14 years), the following topics were addressed: non-communicable diseases in 26.3% of the interventions, subjective well-being in 21% of the interventions and health behaviours and risks in 5.2% of the interventions. It should be taken into consideration that each intervention addresses multiple topics.

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 used was interactive activities which were used in 12 interventions. It includes games, written exercises and drama. As for the third method, three 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 counselling services were used in two interventions, and food fortification, including salt iodisation, was used in one study. The characteristics and demographics of the interventions are provided in online supplemental appendix C.

Regarding interventions that used education, all topics were addressed using this method, taking into consideration that multiple topics are discussed in each intervention. The following topics were discussed: non-communicable diseases were discussed in 36.8% of the interventions, health behaviours and risks in 31.5%; subjective well-being in 26.3%; 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.

Who conducted the interventions?

The interventions were undertaken by either local researchers, foreign researchers or a collaborative effort involving both local and foreign researchers. Most interventions (52.6%) were conducted collaboratively by a combination of researchers from both backgrounds. Local researchers led 26.3% of the interventions, while foreign researchers led a smaller proportion, accounting for only 5.3%. In a subset of interventions, comprising 15.3% of the grey literature, the names of the researchers responsible for conducting them were not specified.

Funding source

The primary funding source for these interventions was international, with 47.4% being funded by international sources. A smaller proportion, 5.3%, received regional funding. In a considerable portion of the studies (36.8%), the funding source was not specified, while 10.5% of the interventions explicitly stated that they did not receive any funding. Among the interventions that declared no external funding, the primary topics addressed were non-communicable diseases, health behaviours and risks and communicable, maternal, perinatal and nutritional conditions, each accounting for 5.2% of these cases.

Ethical consideration

All interventions aimed at the younger age group (10–14 years) 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 online supplemental appendix D.

DISCUSSION

This review studied the health interventions and research conducted for adolescents aged 10–19 years in the oPt. 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 on the most common methods to deliver the intended information in those interventions.

The number of observational studies conducted on adolescents was significantly greater than the number of intervention studies, indicating that the research efforts for adolescents in the oPt and Arab countries, in general, are noteworthy.⁶ There remains an apparent deficit of interventions geared towards adolescents and a need for more efforts to develop this sector, as revealed in our study and other studies conducted in the Arab region.³¹ This could be attributed to insufficient technical investment, which has led to significant gaps in understanding and evidence for effective action. The responsibility for adolescent health is dispersed across various agencies, resulting in inconsistent guidance and the lack of a unified approach. Additionally, health information systems (HISs) are weak, with fragmented data collection that often overlooks the needs of marginalised groups.³²

The age group targeted by research and interventions was primarily those aged 10–19 years, 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 oPt.^{33–35} As for the older age group, 15–19 years was the main target group for sexual and reproductive health (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.³⁶

Most of the Palestinian observational health research and interventions targeted female and male participants together, only a few studies targeted male participants alone; however, they were not targeted in any of the interventions. This could be attributed to several reasons, including the lack of resources in the oPt,³⁷ which makes it necessary for stakeholders to benefit as much as possible from the available resources by targeting both sexes. Furthermore, the marginalisation observed may be attributed to the sensitivity surrounding specific topics, such as SRH, particularly for male participants. 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.³⁸

Furthermore, it was notable that the funding sources were primarily international. The majority of the studies and interventions were conducted with the cooperation of a foreign researcher, indicating that there could be an international influence on the conducted studies, which may affect the types of topics being addressed, making it donor-driven, as donors are seen to impose their agendas in the observational health research, rather than addressing the specific needs of Palestinian adolescents.³⁹ Also, at the time these studies were conducted, no priority list for adolescent health or research was available in the oPt.⁴⁰ This raises the question of who decides what is important to the country and how the research topics and priorities are determined.

This also highlights the low quality of the oPt's HIS, and the need to improve this sector by incorporating adolescents in it.⁴¹ As HIS improves the health services delivered, it can also aid in the development of programmes, policies and research based on the actual needs of adolescents rather than what funding obligates.

Our review found that non-communicable diseases, particularly mental health topics and PTSD, were the most frequently addressed main topics. This could be attributed to the unique context of the oPt as it is an area of conflict, where people are constantly exposed to wars and political violence, whether in Gaza or the West Bank. Such exposure has a significant impact on the mental health of Palestinians, making it an appropriate area for research.⁴² 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.¹⁶

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 behaviour in several health topics as found in many studies worldwide.^{43 44} 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 on completion. Addressing this aspect could enhance the quality of future interventions and offer insights for designing programmes tailored to the specific needs of this age group.⁴⁵

However, many methods were found to be effective in the literature globally that have not been used in any Palestinian intervention for youth. One of these methods is peer-led interventions. It was found that interventions using this method effectively prevented unwanted health behaviours, increased knowledge, changed beliefs about certain health topics and were more acceptable among youth.^{46 47} Additionally, more developed methods could be used in the interventions geared towards adolescents, as these interventions could be more engaging for youth, especially males who were found in our study to be marginalised 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.^{48 49}

In light of the results from this study, it is recommended to target different age groups (10–14 years and 15–19 years) separately in future interventions and research. While many studies have grouped the entire 10–19 age range together, addressing each group's specific needs more effectively requires a tailored approach. Segregating the data for each group allows for a better understanding of their distinct challenges and enables researchers to identify existing interventions, gaps in services and the specific needs of each age group. This focused approach will help improve the relevance and effectiveness of health initiatives for adolescents.

Furthermore, to effectively address the health needs of Palestinian adolescents, it is essential to prioritise and encourage the active involvement of local researchers in adolescent health research in Palestine. By empowering local researchers, we can gain valuable insights into the unique challenges and needs of Palestinian adolescents, which will help design more effective and culturally appropriate interventions. It is also recommended to establish a clear and comprehensive research agenda focused on the specific health priorities of adolescents, ensuring that interventions are targeted and relevant. Strengthening the Palestinian HIS will support evidence-based decision-making, enhancing the quality of health services and enabling the development of tailored programmes and policies that address the specific needs of this population.

Additionally, it is necessary to prioritise adolescent health within the health system plan in the oPt. Our findings revealed that while the primary focus has been on non-communicable diseases, there is limited attention given to the specific needs of adolescents. This highlights a clear need to shift focus towards adolescent health and to develop policies that address their unique challenges, including mental health, nutrition and access to sexual and reproductive health services. Policymakers should integrate adolescent health into national health strategies, ensuring adequate resources are allocated for research and interventions targeting this age group.

Strengths and limitations

This scoping review provides a comprehensive overview of observational health research and interventions conducted in the oPt. It includes data from peer-reviewed articles and grey literature from 2012 to 2023. To the authors' knowledge, this review is the first review to tackle this issue in oPt. However, our study was limited by the fact that many studies related to the topic were found as abstracts for conferences and were not published. There could be different reasons for this, such as the economic instability and lack of funds to publish, or the full research was funded and therefore influenced by the organisation, impacting the topics and policies that are prioritised. Without further information, it is difficult to know for sure the reasons research goes unpublished.

Moreover, a significant limitation in this study is the limited accessibility of unpublished information. Numerous Palestinian organisations and NGOs avoid sharing their data and reports and making them publicly available. Also, a considerable number of organisations 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 oPt, 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 male and female participants, 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.

Correction notice This article has been corrected since it was published. The age group intervals in Table 1 have been corrected.

X Khalifa Elmusharaf @elmusharaf1

Contributors MS: conceptualisation, data curation, screening, formal analysis, writing—original draft. AS: conceptualisation, supervision, reviewing and editing. BM: screening, reviewing and editing. MQ: screening, reviewing and editing. KE: reviewing and editing. NA-R: conceptualisation, supervision, reviewing, editing and guarantor.

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

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information. All data used in this article was obtained from previously published articles, which are all available in online supplemental appendix E.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Mariam Sawalma <http://orcid.org/0000-0002-2943-9733>

Aisha Shalash <http://orcid.org/0000-0001-8955-3207>

Beesan Maraqa <http://orcid.org/0000-0002-6997-0449>

REFERENCES

- 1 UNICEF. Adolescents. 2022. Available: <https://data.unicef.org/topic/adolescents/overview>
- 2 AlBuhairan F, Areemit R, Harrison A, *et al*. Adolescent psychosocial development and evaluation: global perspectives. In: *Complementary pediatrics*. 2012: 179–202.
- 3 Al Makadma AS. Adolescent health and health care in the Arab Gulf countries: Today's needs and tomorrow's challenges. *Int J Pediatr Adolesc Med* 2017;4:1–8.
- 4 Salam RA, Das JK, Lassi ZS, *et al*. Adolescent Health and Well-Being: Background and Methodology for Review of Potential Interventions. *Journal of Adolescent Health* 2016;59:S4–10.
- 5 UNICEF Middle East and North Africa Regional Office and Burnet Institute. Young people's health and wellbeing in the middle east and north Africa region: initial secondary analysis of quantitative data for selected indicators of health and wellbeing among 10–24-year-olds in 20 countries. 2023.
- 6 Obermeyer CM, Bott S, Sassine AJ. Arab Adolescents: Health, Gender, and Social Context. *J Adolesc Health* 2015;57:252–62.
- 7 AlBuhairan FS. Adolescent and Young Adult Health in the Arab Region: Where We Are and What We Must Do. *J Adolesc Health* 2015;57:249–51.
- 8 Makhlof Obermeyer C. Adolescents in Arab countries: Health statistics and social context. *DIFI Family Research and Proceedings* 2015;2015:1.
- 9 Nathani K, Lee W-C, Taha S, *et al*. The Association Between Mental Well-Being and School Attendance Among Palestinian Adolescent Refugees in UNRWA Schools. *Journ Child Adol Trauma* 2023;16:339–50.
- 10 Khatib R, Giacaman R, Khammash U, *et al*. Challenges to conducting epidemiology research in chronic conflict areas: examples from PURE- Palestine. *Confl Health* 2016;10:33.
- 11 Haj-Yahia MM. Political violence in retrospect: Its effect on the mental health of Palestinian adolescents. *Int J Behav Dev* 2008;32:283–9.
- 12 Giacaman R, Abdul-Rahim HF, Wick L. Health sector reform in the Occupied Palestinian Territories (OPT): targeting the forest or the trees? *Health Policy Plan* 2003;18:59–67.
- 13 State of Palestine Ministry of Health. Child & adolescent mental health national strategy 2023 to 2028. 2023.
- 14 Soliman AS, Schairer C. Considerations in setting up and conducting epidemiologic studies of cancer in middle- and low-income countries: the experience of a case-control study of inflammatory breast cancer in North Africa in the past 10 years. *Cancer Med* 2012;1:338–49.
- 15 Khouri R, Azfar S, Charles H, *et al*. A generation on the move: insights into the conditions, aspirations, and activism of arab youth. *Youth in the Arab World*; 2011.
- 16 Mosleh M, Dalal K, Aljeesh Y, *et al*. The burden of war-injury in the Palestinian health care sector in Gaza Strip. *BMC Int Health Hum Rights* 2018;18:28.
- 17 Abuzerr S, Zinszer K, Assan A. Implementation challenges of an integrated One Health surveillance system in humanitarian settings: A qualitative study in Palestine. *SAGE Open Med* 2021;9:20503121211043038.

- 18 Abu Hamad B, Jones N, Gercama I. Adolescent access to health services in fragile and conflict-affected contexts: The case of the Gaza Strip. *Confl Health* 2021;15:40.
- 19 Salam RA, Das JK, Lassi ZS, *et al.* Adolescent Health Interventions: Conclusions, Evidence Gaps, and Research Priorities. *J Adolesc Health* 2016;59:S88–92.
- 20 Steinbeck K, Baur L, Cowell C, *et al.* Clinical research in adolescents: challenges and opportunities using obesity as a model. *Int J Obes* 2009;33:2–7.
- 21 Sharara SL, Kanj SS. War and infectious diseases: challenges of the Syrian civil war. *PLoS Pathog* 2014;10:e1004438.
- 22 Amawi N, Mollica RF, Lavelle J, *et al.* Overview of research on the mental health impact of violence in the Middle East in light of the Arab Spring. *J Nerv Ment Dis* 2014;202:625–9.
- 23 Shalash A, Alsaman HM, Hamed A, *et al.* The range and nature of reproductive health research in the occupied Palestinian territory: a scoping review. *Reprod Health* 2019;16:41.
- 24 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
- 25 Peterson J, Pearce PF, Ferguson LA, *et al.* Understanding scoping reviews: Definition, purpose, and process. *J Am Assoc Nurse Pract* 2017;29:12–6.
- 26 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018;169:467–73.
- 27 Covidence systematic review software. Veritas health innovation, Melbourne, Australia. 2022. Available: www.covidence.org
- 28 Microsoft Corporation. Microsoft excel. 2018. Available: <https://office.microsoft.com/excel>
- 29 IBM Corp. IBM SPSS statistics for Windows, Version 26.0. Armonk, NY IBM Corp.
- 30 Guthold R, Moller A-B, Adebayo E, *et al.* Priority Areas for Adolescent Health Measurement. *J Adolesc Health* 2021;68:888–98.
- 31 Chaaban J. Youth and Development in the Arab Countries: The Need for a Different Approach. *Middle East Stud* 2009;45:33–55.
- 32 Patton GC, Sawyer SM, Santelli JS, *et al.* Our future: a Lancet commission on adolescent health and wellbeing. *Lancet* 2016;387:2423–78.
- 33 Alzaghouli AF, McKinlay AR, Archer M. Post-traumatic stress disorder interventions for children and adolescents affected by war in low- and middle-income countries in the Middle East: systematic review. *BJPsych Open* 2022;8:e153.
- 34 Cotton S, Zebracki K, Rosenthal SL, *et al.* Religion/spirituality and adolescent health outcomes: a review. *J Adolesc Health* 2006;38:472–80.
- 35 Thabet AAM. Psychological well-being of Palestinian children and adolescents in Gaza Strip and West Bank: Review paper. *EC Psychol Psychiatr* 2019;8:197–205.
- 36 Hamdan M, Imam A. Mapping adolescent and youth sexual and reproductive health services in Palestine. Palestinian Medical Relief Society (PMRS); 2019.
- 37 Horton R. The occupied Palestinian territory: peace, justice, and health. *Lancet* 2009;373:784–8.
- 38 El Ansari W, Arafa M, Elbardisi H, *et al.* Scoping review of sexual and reproductive healthcare for men in the MENA (Middle East and North Africa) region: a handful of paradoxes? *BMC Public Health* 2023;23:564.
- 39 AlKhalidi M, Abed Y, Pfeiffer C, *et al.* Assessing policy-makers', academics' and experts' satisfaction with the performance of the Palestinian health research system: a qualitative study. *Health Res Policy Syst* 2018;16:66.
- 40 Abu-Rmeileh NME, Ghandour R, Tucktuck M, *et al.* Research priority-setting: reproductive health in the occupied Palestinian territory. *Reprod Health* 2018;15:27.
- 41 Jabareen H, Khader Y, Taweel A. Health information systems in Jordan and Palestine: the need for health informatics training. *East Mediterr Health J* 2020;26:1323–30.
- 42 Jabr S, Morse M, El Sarraj W, *et al.* Mental health in Palestine: country report. *Arab J Psychiatry* 2013;44:1–6.
- 43 García-Hermoso A, Alonso-Martínez AM, Ramírez-Vélez R, *et al.* Association of Physical Education With Improvement of Health-Related Physical Fitness Outcomes and Fundamental Motor Skills Among Youths: A Systematic Review and Meta-analysis. *JAMA Pediatr* 2020;174:e200223.
- 44 Marinucci A, Grové C, Allen K-A, *et al.* Evaluation of a youth mental health literacy and action program: Protocol for a cluster controlled trial. *Ment Health Prev* 2021;24:200216.
- 45 Capwell EM, Butterfoss F, Francisco VT. Why Evaluate? *Health Promot Pract* 2000;1:15–20.
- 46 Llauradó E, Aceves-Martins M, Prades-Tena J, *et al.* Adolescents encouraging healthy lifestyles through a peer-led social marketing intervention: Training and key competencies learned by peer leaders. *Health Expect* 2022;25:455–65.
- 47 Mohammadi M, Ghaleiha A, Rahnama R. Effectiveness of a Peer-Led Behavioral Intervention Program on Tobacco Use-Related Knowledge, Attitude, Normative Beliefs, and Intention to Smoke among Adolescents at Iranian Public High Schools. *Int J Prev Med* 2019;10:111.
- 48 Rauschenberg C, Schick A, Goetzl C, *et al.* Social isolation, mental health, and use of digital interventions in youth during the COVID-19 pandemic: A nationally representative survey. *Eur Psychiatry* 2021;64:e20.
- 49 Rice S, O'Bree B, Wilson M, *et al.* Leveraging the social network for treatment of social anxiety: Pilot study of a youth-specific digital intervention with a focus on engagement of young men. *Internet Interv* 2020;20:100323.