



ELSEVIER

---



---

 JOURNAL OF  
**ADOLESCENT  
 HEALTH**


---



---

[www.jahonline.org](http://www.jahonline.org)

Review article

## Previsit Multidomain Psychosocial Screening Tools for Adolescents and Young Adults: A Systematic Review

 Jérémy Glasner, M.D.<sup>a,b,\*</sup>, Valentina Baltag, M.D.<sup>c</sup>, and Anne-Emmanuelle Ambresin, M.D.<sup>a,b</sup>
<sup>a</sup> Interdisciplinary Division for Adolescent Health (DISA), Lausanne University Hospital (CHUV), Lausanne, Switzerland<sup>b</sup> Faculty of Biology and Medicine, University of Lausanne (UNIL), Lausanne, Switzerland<sup>c</sup> Department of Maternal, Newborn, Child, Adolescent Health and Ageing (MCA), World Health Organization (WHO), Geneva, Switzerland

Article history: Received April 15, 2020; Accepted October 4, 2020

Keywords: Adolescence; Young adults; Screening; Psychosocial; Previsit; Systematic; Review

---

 A B S T R A C T

Adolescence and young adulthood constitute a period when exploratory behaviors can evolve into risky behaviors. Most causes of adolescent ill health are preventable; therefore, it is a priority to detect them early before they turn into health problems. Previsit multidomain psychosocial screening tools are used by professionals to detect and prioritize potentially problematic issues. In conjunction with appropriate clinician training, these tools have improved clinician screening rates in several areas of adolescent health. This article reviews existing multidomain previsit psychosocial screening tools developed in the 21st century and describes their characteristics using a systematic methodology.

We reviewed 10,623 records to identify 15 different tools in use since 2000 and described their characteristics. Results show that all tools were developed in high-income countries. The tools provide sufficient coverage of many psychosocial domains relevant to young people's health. However, some psychosocial domains such as screen use and strengths are seldomly addressed. Furthermore, the tools rarely focus on young adults as a target population. Future research should assess the effectiveness, acceptability, and psychometric properties of validated psychosocial screening tools and examine how to expand their use in low- and middle-income countries.

© 2020 Society for Adolescent Health and Medicine. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

**IMPLICATIONS AND  
 CONTRIBUTION**

The findings of the current literature review call for an improvement in and validation of existing previsit screening tools. A validated universal previsit multidomain screening tool is a promising way to support professionals in reducing the burden of disease among adolescents and young adults around the world.

Adolescents and young adults are defined as individuals aged 10–19 and 20–24, respectively [1]. This period between childhood and adulthood is characterized by important biological,

emotional, and social changes that offer great opportunities for positive development, yet are also accompanied by risk of increased vulnerability [2,3].

**Conflicts of interest:** The authors have indicated they have no potential conflicts of interest to disclose.

**Disclaimer:** Valentina Baltag is a staff member of the World Health Organization and Jérémy Glasner is a former intern of the World Health Organization. The authors alone are responsible for the views expressed in this review and they do not necessarily represent the decisions or policies of the World Health Organization.

\* Address correspondence to: Jérémy Glasner, M.D., Interdisciplinary Division for Adolescent Health (DISA), Lausanne University Hospital (CHUV), Avenue de la Sallaz 2, Lausanne 1011, Switzerland.

E-mail address: [glasner.jeremy@gmail.com](mailto:glasner.jeremy@gmail.com) (J. Glasner).

Globally, the major causes of loss in disability adjusted life years linked to psychosocial issues in adolescents and young adults are anxiety disorders, depressive disorders, self-harm, road traffic injury, childhood behavioral disorders, drowning, and interpersonal violence. They represent almost half of all disability adjusted life years for adolescents and young adults [1,4]. In addition, almost 70% of disease burden in adults can be prevented by interventions in adolescence targeting major risk factors for noncommunicable diseases such as tobacco and alcohol use, unhealthy diet, and sedentary lifestyles [5].

Given the link between adolescent and adult health, it is crucial to promote a life-course perspective in adolescent health. This entails not only dealing with imminent risks and salient problems to help adolescents stay healthy in the present, but also encouraging healthy lifestyles and discouraging harmful exposures and behaviors (e.g., air pollution, violence, alcohol, and tobacco use) to reduce morbidity, disability, and premature mortality later in adulthood and future generations [1].

Most causes of adolescent ill health are preventable; therefore, it is a priority to detect them early before they turn into health problems. The World Health Organization and many other international organizations promoting adolescent health such as the American Academy of Pediatrics and the International Association for Adolescent Health recommend facilitating young people's disclosure of their risk-taking behaviors and concerns beyond the presenting complaint, by prompting a discussion alongside the general psychosocial assessment [1]. Screening across multiple domains allows for a holistic assessment of the patient and helps professionals better understand how issues may be interconnected. Indeed, risky behaviors often evolve in clusters: when adolescents adopt a risky behavior in one domain, the probability of having issues in another domain increases [6–9].

Taking into account the need to screen for multiple risky behaviors, the HEADSS psychosocial interview tool was developed in 1988 to help physicians detect problems earlier and more effectively. These six broad screening areas stand for Home environment, Education and employment, peer Activities, Drugs, Sexuality and Suicide/depression [10]. Since then, the acronym has been broadened to include some other aspects such as Eating, Safety and security, Screens and Strengths, resulting in the acronym HEEADSSS [11,12].

Unfortunately, little research has focused on the effectiveness of such tools or on identifying the most useful psychosocial domains for screening. Nevertheless, the existing literature shows that psychosocial risk screening together with counseling intervention has a positive impact on young people's engagement with primary care and on their health outcomes [13–16].

Many obstacles to early detection remain. In the clinical setting, some obstacles stem from insufficient training of health care providers, which is related to a general scarcity of adolescent-competent health professionals and adolescent-responsive care [17,18]. Other obstacles are environmental, such as the lack of private consultation rooms and consultation-billing practices, stymieing confidential care, which call into question the acceptability of health care by adolescents [17]. Finally, time constraints of primary care physicians are reported as a key obstacle to the implementation of early detection screening practices and are one of the major reasons why desired discussions on health topics do not occur [19]. Studies report a high prevalence of consultations in the emergency room for this population [20]. Yet, time constraints are characteristic of emergency care settings, which are thus far from ideal to promote effective adolescent-friendly health care. Outside of the clinical setting, barriers to health care accessibility include insurance coverage and cost, limited knowledge of the care network on the part of adolescents, and transition failure [17]. Generally, adolescents have less regular contact with the health system than other age groups, and they often get lost in the transition from pediatric to adult health care [21,22].

Barriers to health care access require creative solutions in identifying the ideal setting to foster preventive care and present opportunities for early detection. In this context, population-based preventive interventions have been shown to reduce risks and enhance protection in communities through effective outreach to young people. Indeed, risk and protective factors predictive of adolescent risk-taking behaviors exist in multiple ecological domains such as community, school, family, and peer groups. Therefore, psychosocial screening could be promising in settings other than health care, such as community settings [23]. Overcoming barriers calls for a multilevel approach including training of health care providers, improvement of health facilities, advocacy for universal coverage, and community interventions.

Previsit screening tools—also called preconsultation or pre-encounter instruments—offer a promising start by responding to barriers such as time constraints, lack of training, and accessibility.

Previsit tools are self-administered before the encounter with a health, education, or social service professional. They can be completed at home, school, or in the waiting room. The professional has access to the results before or right at the beginning of the consultation, and can use them as a guide to orient the consultation in light of the patient's responses.

Among the multiple benefits of psychosocial assessment, looking for adolescent strengths and resources are fundamental to promote positive youth development and enhance resilience. It helps indicate treatment opportunities, such as untreated mental health conditions that are of high concern during adolescence. Similarly, it enables addressing issues such as sexuality together with the emerging need for contraception or protection. It identifies risky behaviors and potential need for clinical intervention [15,24].

A comparison between a previsit multidomain tool and a clinician interview assessment showed shorter administration time, higher detection rate, and equivalent acceptability [25]. Previsit screening enables greater disclosure of sensitive topics as patients are given time alone to reflect on and answer questions [24]. However, questions remain about which previsit screening tools are most appropriate for widespread use. The aims of this article are to review existing multidomain previsit psychosocial screening tools developed in the 21st century and to describe their characteristics using a systematic methodology.

## Methods

We undertook a systematic review of the literature following the *Guidance for conducting systematic scoping reviews* developed by the Joanna Briggs Collaboration [26]. We chose this systematic process because it corresponds best to our aim of clarifying key concepts, mapping the existing literature, describing trends, and identifying research gaps [27].

The eligibility criteria for the tools included the target audience being the general adolescent and young adult population between 10 and 24 years old; the timing being previsit, the inclusion of at least three independent psychosocial domains; and application in a primary care, social or school context. There are no clear definitions in the literature for “multidomain” when applied to a screening tool. We decided to include tools evaluating three or more psychosocial domains to approach a global assessment. This decision is based on the observation that screening tools focusing

only on one area—e.g., substance use—were in fact often associated with a second domain that could be closely connected—e.g., substance use and mental health. For the psychosocial domains, we used the acronym HEEADSSSS. This includes the latest published version of the acronym—i.e., HEEADSSS standing for Home environment, Education and employment, Eating, Activities, Drugs, Sexuality, Suicide/depression, and Safety from injury and violence [12]. Two S's for Screen use and Strengths were important additions. We included sources published between January 2000 and December 2018. The search included records published in English, French, Spanish, Romanian, and Russian given the authors' language skills.

A search strategy was developed and adapted to nine relevant databases: *Embase*, *PubMed*, *CINHAL*, *PsychINFO*, *Cochrane Library*, *Web of Science*, *Global Index Medicus*, *SciELO*, and *Sociological Abstracts*. Key terms combined the concepts of “adolescence”, “psychosocial screening tools”, and “previsit” (the complete search strategies can be found in [Appendix A](#)). In addition, we conducted bibliographic mining and manual searches in databases such as *Google Scholar*, the *Campbell Collaboration*, *IRIS*, *Proquest dissertation and thesis*, and the *Mental Measurements Yearbook*. Finally, we contacted experts through the World Health Organization network, Lausanne University Hospital's Interdisciplinary Division for Adolescent Health network and the International Association for Adolescent Health. We did not include commercial tools that were not made available by the author or were not available in the accessible literature. When instruments covered only part of the target age group (e.g., 18 years and older), they were excluded because the primary audience was not adolescents and young adults.

The records were scanned by title and abstract, and irrelevant records were removed. At this stage, all records describing the development of a tool or mentioning the use of a tool were retained. From 10,623 records, a sample of 300 records was scanned by two authors (J.G., A.-E.A.) to ensure the consistent application of the eligibility criteria. After reaching a high level of consistency, the remaining records were screened by one author (J.G.). Any uncertain records were discussed by the same two authors (J.G., A.-E.A.). About 82 records were retained for full text screening by two authors (J.G., V.B.). If the article described the use of a tool without describing the tool, the original article describing the development of the tool was searched by bibliographic mining or by contacting authors. In the end, we only included those original articles.

Using a table completed by one author (J.G.) and checked by the other authors (V.B., A.-E.A.), we gathered data on the tools regarding information source, availability of a publication, origin, language, administration format, item number, branching logic, administration time, setting, timing, target age group, and coverage of HEEADSSSS domains. Given that some tools present multiple versions depending on patient age, we analyzed each version separately. When possible, we extracted data directly from the full tool made available in the publication or after contacting the author.

Finally, we summarized the data using simple proportions.

In a second step, we mapped the quality measures assessed for the included tools. In addition to using information found in the original articles, we also searched for other sources. Consequently, in June 2020, we conducted a limited search in *Embase* and *Google Scholar* combining quality concepts and the tools' names (the complete search strategies can be found in [Appendix B](#)).

## Results

### *Search results, source, and publication*

The search strategy identified 16 records describing a total of 15 different tools. The full study selection process is detailed in [Figure 1](#). Less than half of the original articles or tools (6/15) were found through the database search, whereas most (9/15) were found through grey literature search (2/9 *Google Scholar*, 5/9 bibliographic mining, 2/9 contacting experts). Almost all tools (14/15) have a publication describing their development. When a more recent version of the tool could be found, data were extracted from this version.

The key characteristics of the tools are described in [Tables 1–3](#).

### *Origin and language*

The origin and language of the tools are shown in [Table 1](#).

All tools without exception were developed in high-income countries (HIC). Most tools (12/15) were developed in Anglophone countries and are, therefore, in English, whereas the remaining tools were developed in Switzerland, Spain, and France. Two tools offer two language options: English-Maori and English-Spanish.

### *Administration*

The administration format of the tools is shown in [Table 2](#).

Almost half of the tools (7/15) are available in an electronic format. Only one tool also exists in a paper format. As of 2010, most tools (4/7) use an electronic format, mainly as an application on a smartphone, tablet, and/or computer.

### *Item number, branch logic, and administration time*

The item number, branch logic, and administration time of the tools are shown in [Table 2](#).

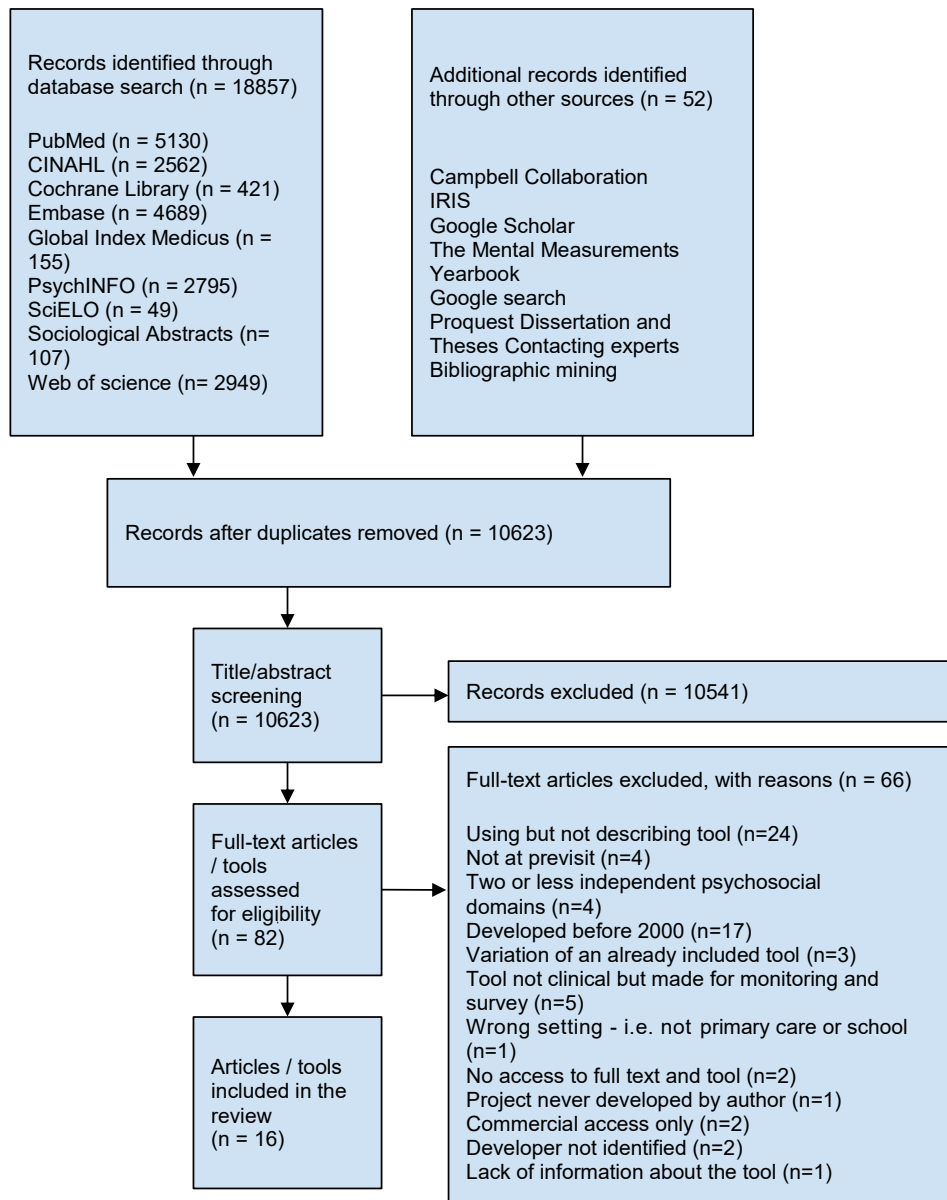
The maximum number of items varies from 9 to 177. Only a minority (6/15) uses branch logic—i.e., question pathway based on the respondent's answers. The administration time is often not specified but when it is, in eight of the tools, it ranges from 3 to 20 minutes and increases with more items, although not proportionally.

### *Setting and timing*

The setting and timing of the tools are shown in [Table 2](#).

The setting and timing for which the tool was developed and applied may differ from those recommended by the authors. For example, some instruments were developed for school settings but also recommended for use in primary care outpatient facilities [37]. Similarly, tools used to collect data opportunistically were recommended for use in routine clinical scheduled visits [37].

Eight tools have been used exclusively in an outpatient primary care setting, whereas three have been used at school. One has been used in both settings. Nonetheless, based on the authors' recommendations, three tools can be used in both primary care and school settings [29,37,43].



**Figure 1.** Flow chart of articles and tools selection.

## Age

The targeted age groups of the tools are shown in [Table 2](#).

Our target group is adolescents and young adults aged 10–24 years. Eight tools cover the entire age group, of which three have multiple versions depending on the patient's age. Only two tools cover the young adult age group exclusively by using a version adapted to the patient's age.

## HEADSSSS domains

The domains covered by each tools are shown in [Table 3](#).

A domain is covered if at least one of the age-adapted versions of the tool mentions it. Some HEADSSSS domains such as Home (13/15), Education and employment (13/15), Eating (11/15), physical Activity (10/15), socialization Activities (10/15), licit and illicit Drugs (13/15), Sexuality (11/15), Suicide and depression (13/15), and Safety and security (13/15) are covered by almost all the tools, whereas others such as Screens (4/15) and Strengths (7/15) are often not addressed.

Some tools had questions addressing domains not included in the acronym. They often covered demographic information, general state and appearance and less frequently gambling and access to medical care.

**Table 1**

Overview of the tools

Tool name/measure	Abbreviation	Year of publication (article)	Language of tool	Country	World bank country classification	Source
Previsit Questionnaire (PVQ) [28]	PVQ	2009	English	Canada	High income	Database
YouthChat [29]	YouthChat	2017	English, Maori	New Zealand	High income	Database
Guide d'entretien confidentiel—early adolescents <sup>a</sup> , [30]	GEC-early	2000	French	Switzerland	High income	Database
Guide d'entretien confidentiel—late adolescents/young adults <sup>a</sup> , [30]	GEC-late	2000	French	Switzerland	High income	Database
Behavioral Health Screen (BHS) [31]	BHS	2010	English	U.S.	High income	Database
Questionnaire pré-consultation [32]	QPC	N/A	French	France	High income	Grey literature (bibliographic mining)
Check Up GP [33]	Check Up GP	2017	English	Australia	High income	Grey literature (Google Scholar)
HEADSS on Tickit Health <sup>a</sup> , [34,35]	Tickit	2013	English	Australia	High income	Grey literature (contacting experts)
Rapid Assessment for Adolescent Preventive Services (RAAPS)_9-12 <sup>a</sup> , [36]	RAAPS 9-12	2009	English	U.S.	High income	Grey literature (bibliographic mining)
Rapid Assessment for Adolescent Preventive Services (RAAPS)_13-18 <sup>a</sup> , [36]	RAAPS 13-18	2009	English	U.S.	High income	Grey literature (bibliographic mining)
Rapid Assessment for Adolescent Preventive Services (RAAPS)_19-24 <sup>a</sup> , [36]	RAAPS 9-12	2009	English	U.S.	High income	Grey literature (bibliographic mining)
Adolescent Health Review (AHR) [37]	AHR	2001	English	U.S.	High income	Database
Behaviour evaluation for risk-taking adolescents (BERTA) [38]	BERTA	2005	Catalan	Spain	High income	Grey literature (Google Scholar)
The Multidimensional Adolescent Assessment Scale (MAAS) [39]	MAAS	2002	English	U.S.	High income	Grey literature (bibliographic mining)
Health eTouch system [40]	eTouch	2008	English	U.S.	High income	Database
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—Younger adolescents [41]	ASQ-young	2010	English	U.S.	High income	Grey literature (contacting experts)
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—Early adolescents [41]	ASQ-early	2010	English	U.S.	High income	Grey literature (contacting experts)
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—15–17 years [41]	ASQ-15-17	2010	English	U.S.	High income	Grey literature (contacting experts)
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—18–21 years [41]	ASQ-18-21	2010	English	U.S.	High income	Grey literature (contacting experts)
Patient screening form (PSF) [42]	PSF	2012	English, Spanish	U.S.	High income	Grey literature (bibliographic mining)
Risky Behavior Questionnaire for Adolescents (RBQ-A) [43]	RBQ-A	2012	English	U.S.	High income	Grey literature (bibliographic mining)

<sup>a</sup> For this tool, a more recent version was used.

### Quality assessment of the tools

The quality measures used to assess the tools are shown in Table 4.

Ten tools have been assessed by quality measures in at least one publication. Utility was measured for eight tools whereas effectiveness for two tools, efficacy and feasibility for one tool each. Acceptability by providers or patients was evaluated for four tools. Validity and reliability were measured for three tools, sensitivity and specificity for two. Overall, the quality measures chosen by the authors are very heterogeneous.

### Discussion

This systematic review sheds light on 15 existing previsit multidomain psychosocial screening tools developed since 2000, to improve the detection of common health issues and needs among adolescents and young adults. Results highlight no representation of low- and middle-income countries (LMIC) in the development stage, heterogeneous quality assessment, and diversity in the format and setting for use. Only a few tools were spanned into young adulthood.

All tools have been developed in HIC, underscoring an undeniable disparity between research on previsit tools in HIC and LMIC. Even though these groups have different needs and

challenges, the use of previsit screening tools could potentially be of benefit in both settings [1,53]. In terms of global burden of disease in adolescents, countries are progressing at a different pace through the epidemiological transition: LMIC face multiple burdens with higher rates of communicable, maternal, and nutritional conditions whereas almost all HIC face non-communicable diseases. In between are countries that have a preponderance of injuries. LMIC are also characterized by an acute lack of resources in infrastructure, staff, and professional training [18,54,55]. On the other hand, HIC face growing budgetary pressures that lead to procurement strategies and policies aimed at maximizing the amount of patient care at the lowest cost to the local authority [56,57]. In sum, both groups face substantial time and effectiveness constraints.

The use of a previsit tool could be a promising response by increasing the efficiency of provider-patient encounters regardless of geographical context, and helping to overcome some of the aforementioned barriers [15,24,58]. Taking a psychosocial history that allows for the identification of resources, treatment opportunities, and detection of risks is universal irrespective of geographic context. However, the implementation of previsit tools will depend on local culture, traditions, religious beliefs, socioeconomic and political factors, particularly by influencing both what and how questions are asked and answered [53]. The adaptability of a universal tool implies that the domains covered



**Table 2**  
Tools' selected characteristics

Tool name/measure	Administration (electronic vs. pen and paper)	Maximum number of items	Branch logic	Administration time (minutes)	Timing (tested)	Setting (tested)	Age range	Early adolescents (10–14)	Late adolescents (15–19)	Young adults (20–24)
Previsit Questionnaire (PVQ) [28]	Pen and paper	14	No	N/A <sup>a</sup>	Opportunistic	Outpatient—primary care	13–19	Yes	Yes	No
YouthChat [29]	Electronic	87	Yes	N/A	Opportunistic	Outpatient—primary care	10–24	Yes	Yes	Yes
Guide d'entretien confidentiel—early adolescents [30]	Pen and paper	38	No	15	Opportunistic	Outpatient—primary care	10–14	Yes	No	No
Guide d'entretien confidentiel—late adolescents/young adults [30]	Pen and paper	52	No	15	Opportunistic	Outpatient—primary care	14–22	No	Yes	Yes
Behavioral Health Screen (BHS) [31]	Electronic	112	Yes	8–15, 12.4	Opportunistic	Outpatient—primary care	12–21	Yes	Yes	Yes
Questionnaire pré-consultation [32]	Pen and paper	43	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Check Up GP [33]	Electronic	64	Yes	N/A	Routine scheduled	Outpatient—primary care	14–25	Yes	Yes	Yes
HEADSS on Tickit Health [34,35]	Electronic	87	Yes	4–24, 13	Routine scheduled	Outpatient—primary care	12–18	Yes	Yes	No
Rapid Assessment for Adolescent Preventive Services (RAAPS)_9-12 [36]	Electronic and pen and paper	22	No	5–10	Opportunistic	School	9–12	Yes	No	No
Rapid Assessment for Adolescent Preventive Services (RAAPS)_13-18 [36]	Electronic and pen and paper	22	No	5–10	Opportunistic	School	13–18	Yes	Yes	No
Rapid Assessment for Adolescent Preventive Services (RAAPS)_19-24 [36]	Electronic and pen and paper	23	No	5–10	Opportunistic	School	19–24	No	No	Yes
Adolescent Health Review (AHR) [37]	Electronic	33	N/A	3	Opportunistic	School	12–18	Yes	Yes	No
Behaviour evaluation for risk-taking adolescents (BERTA) [38]	Pen and paper	9	No	N/A	N/A	School	14–19	Yes	Yes	No
The Multidimensional Adolescent Assessment Scale (MAAS) [39]	Pen and paper	177	No	15–20	Opportunistic	N/A	10–20	Yes	Yes	Yes
Health eTouch system [40]	Electronic	101	Yes	12.5	Opportunistic	Outpatient—primary care	11–18	Yes	Yes	No
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—younger adolescents [41]	Pen and paper	45	No	N/A	N/A	N/A	N/A	Yes	No	No
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—early adolescents [41]	Pen and paper	59	Yes	N/A	N/A	N/A	N/A	Yes	No	No
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—15–17 years [41]	Pen and paper	50	Yes	N/A	N/A	N/A	15–17	No	Yes	No
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—18–21 years [41]	Pen and paper	51	Yes	N/A	N/A	N/A	18–21	No	No	Yes
Patient screening form (PSF) [42]	Pen and paper	20	No	N/A	Routine scheduled	Outpatient—primary care	12–21	Yes	Yes	Yes
Risky Behavior Questionnaire for Adolescents (RBQ-A) [43]	Pen and paper	20	No	3–4	N/A	Outpatient—primary care, school	12–18	Yes	Yes	No

<sup>a</sup> N/A stands for not applicable.

**Table 3**  
Key domains included in the tools

Tool name/measure	Home	Education/ employment	Eat	Activities, physical	Activities, socialization	Drugs, licit	Drugs, illicit	Sexuality	Suicide/ depression	Safety/ security	Screen	Strengths	Other	Other explanation
Previsit Questionnaire (PVQ) [28]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Appearance
YouthChat [29]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Demographics
Guide d'entretien confidentiel—early adolescents [30]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	General state, medicine, appearance
Guide d'entretien confidentiel—late adolescents/young adults [30]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	General state, medicine, appearance
Behavioral Health Screen (BHS) [31]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Demographics, general state, satisfaction
Questionnaire pré-consultation [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Medicine, appearance, open question
Check Up GP [33]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Demographics, appearance, medicine, satisfaction
HEADSS on Tickit Health [34,35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Aboriginal, appearance, satisfaction
Rapid Assessment for Adolescent Preventive Services (RAAPS) <sub>9-12</sub> [36]	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Demographics
Rapid Assessment for Adolescent Preventive Services (RAAPS) <sub>13-18</sub> [36]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Demographics
Rapid Assessment for Adolescent Preventive Services (RAAPS) <sub>19-24</sub> [36]	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Demographics
Adolescent Health Review (AHR) [37]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Demographics
Behaviour evaluation for risk-taking adolescents (BERTA) [38]	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No	Yes	Demographics
The Multidimensional Adolescent Assessment Scale (MAAS) [39]	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Cognition: memory loss
Health eTouch system [40]	No	No	No	No	No	Yes	Yes	No	Yes	Yes	No	No	No	no
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—younger adolescents [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Demographics, access to medical care
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—early adolescents [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Demographics, access to medical care, piercing and tattoos
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—15–17 years [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Demographics, access to medical care, piercing and tattoos
Bright Futures Adolescent Supplemental Questionnaire (ASQ)—18–21 years [41]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Demographics, access to medical care, piercing and tattoos
Patient screening form (PSF) [42]	Variable <sup>a</sup>	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable	Variable
Risky Behavior Questionnaire for Adolescents (RBQ-A) [43]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Variable Shoplifting, gambling

<sup>a</sup> Variable because the items are based on an algorithm considering the patients' age and electronic medical record.

**Table 4**

Quality assessment of the tools

Tool name/measure	Type of quality assessment <sup>a</sup>	Summary
Previsit Questionnaire (PVQ) [28]	Efficacy	- Increases the number of psychosocial issues without diagnoses recorded and the number of psychosocial actions taken, decreases the number of medical actions taken suggesting that it increases physician awareness of psychosocial issues
YouthChat [25,44]	Acceptability (provider), acceptability (patient), utility, effectiveness	- For patients: easy to use, gives them time to reflect on their responses and what to discuss with their clinician - For providers: makes consultations faster, helps to guide their conversation and address sensitive issues - To be improved: interface could be more appealing, student literacy issues
Guide d'entretien confidentiel Behavioral Health Screen (BHS) [31,45–47]	N/A <sup>b</sup> Validity, reliability, utility, acceptability (provider), acceptability (patient), sensitivity, specificity	- Strong internal consistency as well as impressive convergent and divergent validity. High specificity and sensitivity - For patients: user-friendly, helpful during the appointment - For providers: helps to identify patients with internalizing symptoms and/or at-risk for suicide, helps to facilitate and plan the visit
Questionnaire pré-consultation Check Up GP [33,48]	N/A Utility, acceptability (patient)	- For patients: gives a chance to prepare and reflect on their responses - For providers: improves disclosure, expanding patient understanding of the scope of what their provider can help them with - To be improved: privacy during completion
HEADSS on Tickit Health [34,35]	Acceptability (provider), acceptability (patient), utility	- For patients: easy to use, comfortable with the questions asked, helps them talk with their provider - For providers: saves time, offers a non-judgmental way for young people to provide answers to difficult questions
Rapid Assessment for Adolescent Preventive Services (RAAPS) [36,49–52]	Effectiveness, reliability, validity, specificity, sensitivity, acceptability (provider), utility	- Validity and reliability established with good internal consistency, content validity and face validity. Strong specificity and sensitivity - For providers: encourages communication and disclosure, time efficient, easy to use, comprehensive risk assessment - To be improved: mostly not valid in Colombia
Adolescent Health Review Behaviour evaluation for risk-taking adolescents (BERTA) [38]	N/A Utility	- Good instrument to detect adolescents with at least one risky behavior; youth with a score higher than 1 are more than twice as likely to have any risky behavior
The Multidimensional Adolescent Assessment Scale (MAAS) [39]	Validity, reliability	- Reliable and valid method of measuring multiple domains of functioning
Health eTouch system [40]	Utility, feasibility	- Standardized behavioral screening is feasible in pediatric primary care clinic through computerized technology - May help initiate conversation with providers on topics that otherwise would not have been discussed
Bright Futures Adolescent Supplemental Questionnaire (ASQ)	N/A	
Patient screening form (PSF) [42]	Utility	- Significantly decreases the burden of identifying relevant guidelines and screening
Risky Behavior Questionnaire for Adolescents (RBQ-A)	N/A	

<sup>a</sup> The terms listed are the ones used by the authors. If no term was specified in their article, we chose the ones we considered most appropriate.

<sup>b</sup> N/A stands for not applicable.

should be similar, but individual items may be adapted to the local context.

The quality assessment of the 15 existing tools showed that measures of validity or reliability were scarce and not

standardized. Despite widespread recommendations for psychosocial screening, it is surprising that so little research has been carried out on its effectiveness. That said, the main aim for such tools is their ability to facilitate early detection which may



lead to a long-term positive impact on patient health. To develop a “gold standard” previsit screening tool, their psychometric properties, their validity, and their effectiveness and acceptability for patients and providers need to be assessed. Implementing routine previsit assessment requires not only an effective screening tool but also major changes in health systems. These include insurance coverage, availability of health care services, and availability of adolescent-friendly health care providers with adolescent-specific health knowledge.

In terms of administration, more than half of the tools are electronic, providing further evidence that digital technology is gaining more ground. In many countries such as the U.S., 95% of teens have access to a smartphone [59], whereas this rate is lower in LMIC and varies greatly between urban and rural areas [60]. The increase of smartphone ownership in both HIC and LMIC [61,62] has an impact on the way adolescents and young adults gain health literacy, with over half seeking health information online [63,64]. This observation urges a better integration of technology into clinical practice with important reflections to be made on the implementation of previsit screening tools. First, a robust platform that is well integrated with the patient’s electronic health record provides the ideal infrastructure. There should be a way to track changes over time and generate statistics. Second, as with any health-related data, confidentiality and data protection should be guaranteed [65]. This raises issues of encryption and storage of sensitive information. Third, a high level of user-friendliness will encourage high adoption rates among both patients and providers. For example, the professional should be able to identify easily the most challenging areas on a results dashboard and thus prioritize quickly.

Despite the important role of previsit psychosocial screening in the care of adolescents and young adults, it is essential to remember that screening is only a first step in care [66]. In fact, inquiring about intimate and health issues also raises patient expectations and requires the provider to react. Not reacting to a detected problem could be even more harmful than not screening at all [24]. In reality, many health professionals feel that they are inadequately equipped to manage the psychosocial issues of adolescents and young adults [67]. Because screening tools coupled with brief interventions have already proven their worth and can lead to better health outcomes [13], targeted training sessions for brief clinical interventions should accompany the introduction of a previsit psychosocial screening tool [68,69]. Ideally, this would be a brief and specific individualized intervention undertaken by the professional and integrated with the tool [70].

Almost half of the tools reviewed do not include the young adult age group as a target. Yet, young adults are still in a period of vulnerability and still present an important morbidity associated with psychosocial domains [71]. Developing a previsit screening tool covering the 20- to 24-year-old age group could potentially improve the effectiveness of the clinical encounter with young adults. Making the tool available in various versions, or using a branch logic depending on the age of the patient, are effective ways to ensure it is adapted to their situation and level of understanding.

Finally, the HEADSS acronym should continue its expansion to include new issues that have health repercussions, such as the exponential rise in screen use that is associated with problems spanning family conflict, sleep disturbance, and somatic problems, to name only a few [72,73]. Concurrently, the integration of

a “strengths” category and thereby a more positive approach to youth development, such as the one adopted by the SSHADESS screen, would also allow professionals to promote and build on adolescents’ resources and opportunities [74].

### Limitations

We did not conduct a systematic examination of every published article using the tools identified in our review. Therefore, there may be published evidence on some tools that has not been integrated in this review. In addition, even though we contacted as many experts and international organizations as possible, many unpublished tools may be used clinically. Indeed, our search was complicated by the sheer number of centers that could have been contacted worldwide.

### Conclusion

Previsit multidomain psychosocial screening tools are used widely in clinical and school settings to detect risk-taking behaviors and strengths in adolescents and young adults. Acceptability by health care professionals is high, and evidence suggests that such tools are very useful. However, there is no current gold standard.

Our review identified opportunities to improve the content and focus of existing previsit screening tools. Future research should focus on developing a validated tool for adolescents and young adults that could be adapted to local contexts in both LMIC and HIC. For this and all other tools, their psychometric properties, effectiveness, acceptability for both the patient and providers, and predictive utility should be evaluated.

The implementation of a validated universal previsit multidomain screening tool in clinical practice would support professionals around the globe with their mandate in prevention and detection, including early identification of adolescent and young adult health needs. By enhancing systematic psychosocial health risk assessment and linking it to brief individualized interventions, their use may contribute to reducing the burden of ill health in adolescents around the world and yield long-term health benefits at both individual and collective levels.

### Acknowledgments

The authors wish to express their gratitude to Cécile Jaques from Lausanne University Hospitals’ Medical Library as well as Tomas Allen and José Luis Garnica from the World Health Organizations’ Library and Information Networks for Knowledge for their valuable contribution to the search strategy. Nathalie Gons and Jen Wang proofread and edited the manuscript for language.

Authors’ contributions: Jérémy Glasner was the main author. He conceived the research question, developed the research strategy, screened the records, and drafted and revised the manuscript. Anne-Emmanuelle Ambresin and Valentina Baltag were supervisors of this project. They contributed equally to the conception of the research question, development of the research strategy, screening process, discussion of the results, and revision of various versions of the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work. Jérémy Glasner was an Intern in the Department of Maternal, Newborn, Child, Adolescent Health and Ageing (MCA), World Health Organization

(WHO), Geneva, Switzerland from October 2018 to February 2019.

### Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jadohealth.2020.10.003>.

### References

- [1] World Health Organization. Global accelerated action for the health of adolescents (AA-HAI): Guidance to support country implementation. Geneva, Switzerland: World Health Organization; 2017:viii.
- [2] Sawyer SM, Afifi RA, Bearinger LH, et al. Adolescence: A foundation for future health. *Lancet* 2012;379:1630–40.
- [3] Sawyer SM, Azzopardi PS, Wickremarathne D, Patton GC. The age of adolescence. *Lancet Child Adolesc Health* 2018;2:223–8.
- [4] World Health Organization. Global health estimates 2015: Deaths by cause, age, sex, by country and by region, 2000–2015. Geneva, Switzerland: World Health Organization; 2016.
- [5] Dick B, Ferguson BJ. Health for the world's adolescents: A second chance in the second decade. *J Adolesc Health* 2015;56:3–6.
- [6] Hallfors DD, Waller MW, Ford CA, et al. Adolescent depression and suicide risk: Association with sex and drug behavior. *Am J Prev Med* 2004; 27:224–31.
- [7] Charrier L, Berchiolla P, Dalmasso P, et al. Cigarette smoking and multiple health risk behaviors: A latent class regression model to identify a profile of young adolescents. *Risk Anal* 2019;39:1771–82.
- [8] Gausman J, Lloyd D, Kallon T, et al. Clustered risk: An ecological understanding of sexual activity among adolescent boys and girls in two urban slums in Monrovia, Liberia. *Soc Sci Med* 2019;224:106–15.
- [9] Bond L, Patton G, Glover S, et al. The Gatehouse project: Can a multilevel school intervention affect emotional wellbeing and health risk behaviours? *J Epidemiol Community Health* 2004;58:997–1003.
- [10] Goldenring JM. Getting into adolescent heads. *Contemp Pediatr* 1988;5: 75–90.
- [11] Goldenring JM, Rosen DS. Getting into adolescent heads: An essential update. *Contemp Pediatr* 2004;21:64–90.
- [12] Klein DA, Goldenring JM, Adelman WP. HEEADSSS 3.0: The psychosocial interview for adolescents updated for a new century fueled by media. *Contemp Pediatr* 2014;16–28.
- [13] Sanci L, Grabsch B, Chondros P, et al. The prevention access and risk taking in young people (PARTY) project protocol: A cluster randomised controlled trial of health risk screening and motivational interviewing for young people presenting to general practice. *BMC Public Health* 2012;12:15.
- [14] Richardson LP, Zhou C, Gersh E, et al. Effect of electronic screening with personalized feedback on adolescent health risk behaviors in a primary care setting: A randomized clinical trial. *JAMA Netw Open* 2019;2.
- [15] Ozer EM, Adams SH, Lustig JL, et al. Can it be done? Implementing adolescent clinical preventive services. *Health Serv Res* 2001;36:150–65.
- [16] Webb M, Kauer S, Ozer E, et al. Does screening for and intervening with multiple health compromising behaviours and mental health disorders amongst young people attending primary care improve health outcomes? A systematic review. *BMC Fam Pract* 2016;17.
- [17] Tylee A, Haller DM, Graham T, et al. Youth-friendly primary-care services: How are we doing and what more needs to be done? *Lancet* 2007;369: 1565–73.
- [18] Sawyer SM, Baltag V. Toward an adolescent competent workforce. In: Cherry ALBV, Dillon M, eds. *International handbook on adolescent health and development: The public health response*. Switzerland: Springer; 2017:325–40.
- [19] Strasburger VC, Brown RT, Braverman PK, et al. *Adolescent medicine: A handbook for primary care*. Philadelphia (PA): Lippincott Williams & Wilkins; 2005:16.
- [20] Weiss AL, D'Angelo LJ, Rucker AC. Adolescent use of the emergency department instead of the primary care provider: Who, why, and how urgent? *J Adolesc Health* 2014;54:416–20.
- [21] Nair M, Baltag V, Bose K, et al. Improving the quality of health care services for adolescents, globally: A standards-driven approach. *J Adolesc Health* 2015;57:288–98.
- [22] Sawyer SM, Baltag V. Quality healthcare for adolescents. In: Cherry ALBV, Dillon M, eds. *International handbook on adolescent health and development: The public health response*. Switzerland: Springer; 2017:309–24.
- [23] Hawkins JD, Catalano RF, Arthur MW. Promoting science-based prevention in communities. *Addict Behav* 2002;27.
- [24] Bradford S, Rickwood D. Psychosocial assessments for young people: A systematic review examining acceptability, disclosure and engagement, and predictive utility. *Adolesc Health Med Ther* 2012;3:111–25.
- [25] Thabrew H, D'Silva S, Darragh M, et al. Comparison of YouthCHAT, an electronic composite psychosocial screener, with a clinician interview assessment for young people: Randomized controlled trial. *J Med Internet Res* 2019;21:e13911.
- [26] Peters MD, Godfrey CM, Khalil H, et al. Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc* 2015;13:141–6.
- [27] Armstrong R, Hall BJ, Doyle J, Waters. Cochrane update. 'Scoping the scope' of a Cochrane review. *J Public Health (Oxf)* 2011;33.
- [28] Lewin W, Knauper B, Roseman M, et al. Detecting and addressing adolescent issues and concerns: Evaluating the efficacy of a primary care previsit questionnaire. *Can Fam Physician* 2009;55:742–3. 743.e741–744.
- [29] Goodyear-Smith F, Martel R, Darragh M, et al. Screening for risky behaviour and mental health in young people: The YouthCHAT programme. *Public Health Rev* 2017;38:20.
- [30] Dafflon M, Michaud PA. A clinical questionnaire for facilitating consultation with the adolescent. *Praxis (Bern)* 2000;89:24–31.
- [31] Diamond G, Levy S, Bevans KB, et al. Development, validation, and utility of internet-based, behavioral health screen for adolescents. *Pediatrics* 2010; 126:e163–70.
- [32] Alvin P. Questionnaire pré-consultation. France: Institut national de prévention et d'éducation pour la santé; 2009.
- [33] Webb MJ, Wadley G, Sanci LA. Improving patient-centered care for young people in general practice with a codesigned screening app: Mixed methods study. *JMIR Mhealth Uhealth* 2017;5:e118.
- [34] Whitehouse SR, Lam PY, Balka E, et al. Co-creation with TickIT: Designing and evaluating a clinical eHealth platform for youth. *JMIR Res Protoc* 2013; 2:e42.
- [35] Maari Ma Health Aboriginal Corporation. Maari Ma TickIT evaluation report. Broken Hill, Australia: Maari Ma Health Aboriginal Corporation; 2018:1–25.
- [36] Yi CH, Martyn K, Salerno J, Darling-Fisher CS. Development and clinical use of rapid assessment for adolescent preventive services (RAAPS) questionnaire in school-based health centers. *J Pediatr Health Care* 2009;23:2–9.
- [37] Harrison PA, Beebe TJ, Park E. The adolescent health review: A brief, multidimensional screening instrument. *J Adolesc Health* 2001;29:131–9.
- [38] Suris JC, Nebot M, Parera N. Behaviour evaluation for risk-taking adolescents (BERTA): An easy to use and assess instrument to detect adolescent risky behaviours in a clinical setting. *Eur J Pediatr* 2005;164:371–6.
- [39] Mathiesen SG, Cash SJ, Hudson WW. The multidimensional adolescent assessment scale: A validation study. *Res Soc Work Pract* 2002;12:9–28.
- [40] Stevens J, Kelleher KJ, Gardner W, et al. Trial of computerized screening for adolescent behavioral concerns. *Pediatrics* 2008;121:1099–105.
- [41] Bright futures tool and resource kit. Washington, DC: American Academy of Pediatrics; 2007.
- [42] Anand V, Carroll AE, Downs SM. Automated primary care screening in pediatric waiting rooms. *Pediatrics* 2012;129:e1275–81.
- [43] Auerbach RP, Gardiner CK. Moving beyond the trait conceptualization of self-esteem: The prospective effect of impulsiveness, coping, and risky behavior engagement. *Behav Res Ther* 2012;50:596–603.
- [44] Goodyear-Smith F, Corter A, Suh H. Electronic screening for lifestyle issues and mental health in youth: A community-based participatory research approach. *BMC Med Inform Decis Mak* 2016;16.
- [45] Diamond G, Herres J, Krauthamer Ewing E, et al. Comprehensive screening for suicide risk in primary care. *Am J Prev Med* 2017;53.
- [46] Herres J, Kodish T, Fein J, Diamond G. Screening to identify groups of pediatric emergency department patients using latent class analysis of reported suicidal ideation and behavior and non-suicidal self-injury. *Arch Suicide Res* 2018;22.
- [47] Bevans K, Diamond G, Levy S. Screening for adolescents' internalizing symptoms in primary care: Item response theory analysis of the behavior health screen depression, anxiety, and suicidal risk scales. *J Dev Behav Pediatr* 2012;33.
- [48] Larsen M, Gardner K, Webb MJ, et al. Experiences of general practitioners and practice support staff using a health and lifestyle screening app in primary health care: Implementation case study. *JMIR Mhealth Uhealth* 2018;6.
- [49] Suarez-Pinto TA, Blanco-Gomez A, Diaz-Martinez LA. Validation of the Spanish-language version of the rapid assessment for adolescent preventive services among Colombian adolescents. *Arch Argent Pediatr* 2016;114: 448–52.
- [50] Salerno J, Marshall VD, Picken EB. Validity and reliability of the rapid assessment for adolescent preventive services adolescent health risk assessment. *J Adolesc Health* 2012;50:595–9.
- [51] Salerno J, Barnhart S. Evaluation of the RAAPS risk screening tool for use in detecting adolescents with depression. *J Child Adolesc Psychiatr Nurs* 2014;27.

- [52] Darling-Fisher C, Salerno J, Dahlem C, Martyn K. The rapid assessment for adolescent preventive services (RAAPS): Providers' assessment of its usefulness in their clinical practice settings. *J Pediatr Health Care* 2014;28.
- [53] Azzopardi PS, Hearps SJC, Francis KL, et al. Progress in adolescent health and wellbeing: Tracking 12 headline indicators for 195 countries and territories, 1990-2016. *Lancet* 2019;393:1101–18.
- [54] World Health Organization. Human resources for health: Foundation for universal health coverage and the post-2015 development agenda: Report of the third global forum on human resources for health. Geneva, Switzerland: World Health Organization; 2014:1–27.
- [55] Kokotailo PK, Baltag V, Sawyer SM. Educating and training the future adolescent health workforce. *J Adolesc Health* 2018;62:511–24.
- [56] The Health Foundation. Need to nurture: Outcomes-based commissioning in the NHS. The Health Foundation; 2015:1–27.
- [57] PricewaterhouseCoopers. Designing and Contracting Services Guidance. Canberra, Australia: Australian Government Department of Health; 2016:1–27.
- [58] Ozer EM, Adams SH, Lustig JL, et al. Increasing the screening and counseling of adolescents for risky health behaviors: A primary care intervention. *Pediatrics* 2005;115:960–8.
- [59] Anderson M, Jiang J. Teens, social media & technology 2018. Washington (D.C.): Pew Research Center; 2018:2.
- [60] Porter G, Hampshire K, Abane A, et al. Youth, mobility and mobile phones in africa: Findings from a three-country study. *Inform Technol Dev* 2012; 18:145–62.
- [61] Poushter J. Smartphone ownership and internet usage continues to climb in emerging economies. Washington (D.C.): Pew Research Center; 2016:16–20.
- [62] Taylor K, Silver L. Smartphone ownership is growing rapidly around the world, but not always equally. Washington (D.C.): Pew Research Center; 2019:8–18.
- [63] Reid Chassiakos YL, Radesky J, Christakis D, et al. Children and adolescents and digital media. *Pediatrics* 2016;138.
- [64] Borzekowski DL, Fobil JN, Asante KO. Online access by adolescents in accra: Ghanaian teens' use of the internet for health information. *Dev Psychol* 2006;42:450–8.
- [65] National eHealth strategy toolkit. World Health Organization and International Telecommunication Union; 2012:47–59.
- [66] Ham P, Allen C. Adolescent health screening and counseling. *Am Fam Physician* 2012;86:1109–16.
- [67] Emans SJ, Bravender T, Knight J, et al. Adolescent medicine training in pediatric residency programs: Are we doing a good job? *Pediatrics* 1998; 102:588–95.
- [68] World Health Organization. Adolescent job aid: A handy desk reference tool for primary level health workers. Geneva, Switzerland: World Health Organization; 2010:1–171.
- [69] Sanci L, Chondros P, Sawyer S, et al. Responding to young people's health risks in primary care: A cluster randomised trial of training clinicians in screening and motivational interviewing. *PLoS One* 2015;10: e0137581.
- [70] Zieve GG, Richardson LP, Katzman K, et al. Adolescents' perspectives on personalized E-feedback in the context of health risk behavior screening for primary care: Qualitative study. *J Med Internet Res* 2017;19:e261.
- [71] Committee on Improving the Health S, and Well-Being of Young Adults; Board on Children, Youth, and Families; Institute of Medicine; National Research Council. Investing in the health and well-being of young adults. Washington (D.C.): National Academies Press; 2015:35–76.
- [72] Levenson JC, Shensa A, Sidani JE, et al. The association between social media use and sleep disturbance among young adults. *Prev Med* 2016;85: 36–41.
- [73] Hakala PT, Rimpela AH, Saarni LA, Salminen JJ. Frequent computer-related activities increase the risk of neck-shoulder and low back pain in adolescents. *Eur J Public Health* 2006;16:536–41.
- [74] Ginsburg KR. The SSHADESS screen: A strength-based psychosocial assessment. In: Reaching teens: Strength-based communication strategies to build resilience and support healthy adolescent development. Itasca (IL): American Academy of Pediatrics; 2013:139–64.