



Review article

Identifying available substance use disorder screening tests feasible for use in primary care: A systematic review

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ABSTRACT

Substance use disorders substantially contribute to the global burden of disease. Early detection in primary care is recommended, and numerous screening tests are available. However, barriers to addictive disorder screening exist and the feasibility of using these tests in primary care is unclear. This study aims to identify available addictive disorder screening tests whose feasibility has been evaluated in primary care. This systematic literature review was performed using Pubmed, PsycINFO, and the Cochrane Library databases. The search strategy included four research topics: addictive disorders, screening, primary care, and feasibility. Selection criteria included published studies evaluating the feasibility of an addictive disorder screening test in primary care. Data were extracted for each included article, and each analyzed screening test. Of the 4911 articles selected, 20 were included and 16 screening tests were studied. Physician feasibility was evaluated with satisfaction questionnaires or qualitative studies, mainly measuring test administration time. Patient feasibility was measured using criteria including “ease of use”, comprehension, or format preference. Self-administered formats were preferred, especially electronic versions. Overall, the TAPS (Tobacco, Alcohol, Prescription medication, and other Substance use) tool provides a good balance between ease of use, brevity of administration and more extensive screening for substance use disorders. Feasibility appears to be a set of heterogeneous criteria relating to users, including comprehension or satisfaction, and practical aspects, including administration time or format preference. The criteria synthesized in this review could serve as a basis for screening test feasibility studies in primary care given the absence of feasibility study guidelines.

1. Introduction

Substance use disorders substantially contribute towards the global burden of disease (Barrio et al., 2017; United Nations publication, 2019). Also, substance use disorders are linked to premature death and disability (OFDT, 2019; World Health Organization, 2018; Zhang et al., 2017) and share neurobiological and genetic similarities with non-substance addictive behaviors (Grant et al., 2006, 2010; Potenza, 2008). Yet, screening for hazardous and harmful substance use misuse disorders including addictive substance use disorders screening can reduce mortality and improve quality of lifehealth-related risks (Baumeister et al., 2014; De Maeyer et al., 2010; Laudet, 2011; US Preventive Services Task Force et al., 2018; WHO, 2015) and many primary practice guidelines recommend screening using the Screening, Brief Intervention and Referral to Treatment (SBIRT) protocol (Babor et al., 2007, 2017). However, the numerous screening tests available facilitate early

addictive disorder screening. Our previous study (Pautrat et al., 2022) revealed seventeen addictive disorder screening tests validated in primary care. These tests screen for unhealthy substance use and substance use disorders but none screen for non-substance addictive behaviors.

Nevertheless, screening is made more difficult with practical barriers such as lack of time in consultations, integration into clinical workflow or high workload. (M. Johnson et al., 2011; McNeely et al., 2018; Yarnall et al., 2003). Furthermore, physicians report lacking knowledge or training, and patients being fearful of being stigmatized, which may make them reluctant to talk about addiction (Pautrat et al., 2019a). Similarly, patients report feeling uncomfortable disclosing their addiction or not being ready to discuss it (Pautrat et al., 2019b).

However, some of these barriers could be avoided by using validated, easily administered substance use disorder screening tests with good completion rates. Easily-administered tests include self-administered tests (Harris et al., 2016; McNeely et al., 2014, 2015), audio-assisted

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tests (Kumar et al., 2016; McNeely et al., 2016a; O'Reilly et al., 1994), and brief versions (Ali et al., 2013; Bradley et al., 2007; Brown et al., 2001; Knight et al., 2003). It is not clear however if these easily-administered screening tests are feasible for use in daily practice. Feasibility is a broad term that encompasses both acceptability and practicality of the test (Bowen et al., 2009). Studies that assess feasibility provide useful information about how a screening test will work in daily practice.

This study aims to identify available addictive disorder screening tests which have undergone feasibility testing in primary care.

2. Method

2.1. Search strategy

This systematic literature review used Pubmed, PsycINFO and the Cochrane Library from database inception to September 05, 2022. The review protocol was registered with the International Prospective Register of Systematic Reviews (PROSPERO Registration CRD42022378795). The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher et al., 2009) were followed for the search, data extraction, analysis and reporting strategies.

Four research topics were included in the search strategy: addictive disorders, screening, primary care, and feasibility. Addictive disorders included substance use disorders such as opioids, cannabis or alcohol, and non-substance addictive behaviors, but we have not included the less defined consumption levels such as unhealthy use hazardous or harmful or risky use. Gambling and gaming disorders are currently the only acknowledged addictive behavior categories, but we also included currently unclassified behaviors such as food, sex, exercise, and work.

There is no single definition of feasibility, particularly for assessing screening tests. For this reason, the term 'feasibility' is not always used. In this systematic review, the feasibility topic therefore also included terms such as acceptability, practicality, applicability, and accessibility. Specific keywords were used to build search algorithms for each database such as MeSH terms for Pubmed (Appendix).

2.2. Inclusion and exclusion criteria

Any study evaluating the feasibility of one or several substance use disorder screening tests in primary care settings was eligible for inclusion in this study. Narrative reviews were excluded due to their poor scientific value. Also, any studies including specific ethnic populations rather than the general population were excluded. Psychiatric or dementia populations were also excluded as the quality and honesty of replies during screening could be altered. In addition, multimodal screening tests exploring addictive disorders alongside other domains were excluded since it was not always possible to extract results relating just to the substance use disorder screening section of the test. Studies could be in any language.

2.3. Selection process

A three-step process was used to analyze the search results. Firstly, a single reviewer selected articles based on the title and excluded irrelevant studies. Secondly, two reviewers independently read the abstract and selected articles. If they had any doubt, the full text was read to gain further information about study design, population or screening test feasibility and the reviewers could consult one another if necessary. Thirdly, the references from each selected article were hand-searched to find additional relevant articles. Cohen's Kappa was used to measure inter-rater reliability (Cohen, 1960).

2.4. Data extraction

All authors shared the data extraction, which was then performed independently. For each included article, the data extracted included country of study, screening test used, substance use disorder studied, characteristics of included population, and the method used to evaluate feasibility.

For each analyzed screening test, extracted data included the different existing and studied formats, screening test administration or completion duration, number of questions, feasibility criteria and format preference for patients or physicians. Feasibility criteria included completion or administration time, ease of use, comprehension, usefulness and applicability.

Data were presented in tables.

2.5. Ethical compliance

This systematic review was based on publicly available anonymized data and is therefore exempt from ethical compliance.

3. Results

3.1. Included studies

A total of 4911 articles were found in the search and four from hand-searching the selected article references. After screening the titles, abstracts, and full text, and removing duplicates, 20 articles were included (Fig. 1). A substantial number of articles were excluded during the selection process. Many were excluded as they included the search term *drug* which can refer to medical treatments and not addictive substances. Other articles were excluded for describing an interventional study rather than a feasibility study. Furthermore, many studies were excluded because the full text revealed that only the brief intervention and referral to treatment and not the screening were evaluated, despite the abstract stating that the study evaluated the SBIRT protocol. Other articles were excluded as the abstract mentioned a screening test feasibility study, but no feasibility study was found in the full text. There was almost perfect agreement according to the inter-rater reliability (Cohen's Kappa = 0.94). Most included studies were published in the last ten years, half were conducted in the United States, and 3 were qualitative studies. A description of included studies are shown in Table 1.

3.2. Feasibility study designs

Different methods were used to study the feasibility of addictive disorder screening tests. Satisfaction questionnaires or a brief survey were the most commonly used methods (Adam et al., 2019; Bertholet et al., 2019a; Chan-Pensley, 1999; Christoff et al., 2016; Dyches et al., 1999; N. A. Johnson et al., 2013; Nguyen et al., 2001; Ríos-Bedoya and Hay, 2013; Smith et al., 2011; Wu et al., 2016). Some studies used interviews or focus groups with feedback or an interview guide (Eyles et al., 2013; Farrell et al., 2009a; Farrell et al., 2009b; McNeely et al., 2016a; Rose et al., 2010; Spear et al., 2016; WHO ASSIST Working Group, 2002).

3.3. Screening tests and studied formats

Sixteen validated substance use disorder screening tests were included, all of which screened for substance use disorders, and none screened for non-substance addictive behaviors. Those tests validated for unhealthy substance use, were DAST-10 (Drug Abuse Screening Test), substance use disorders, CAGE-AID (Cut-down, Annoyed, Guilty, Eye-opener-Adapted to Include Drug use). Others were validated for both substance use disorders or non-substance addictive behaviors such as ASSIST (Alcohol, Smoking and Substance Involvement Screening

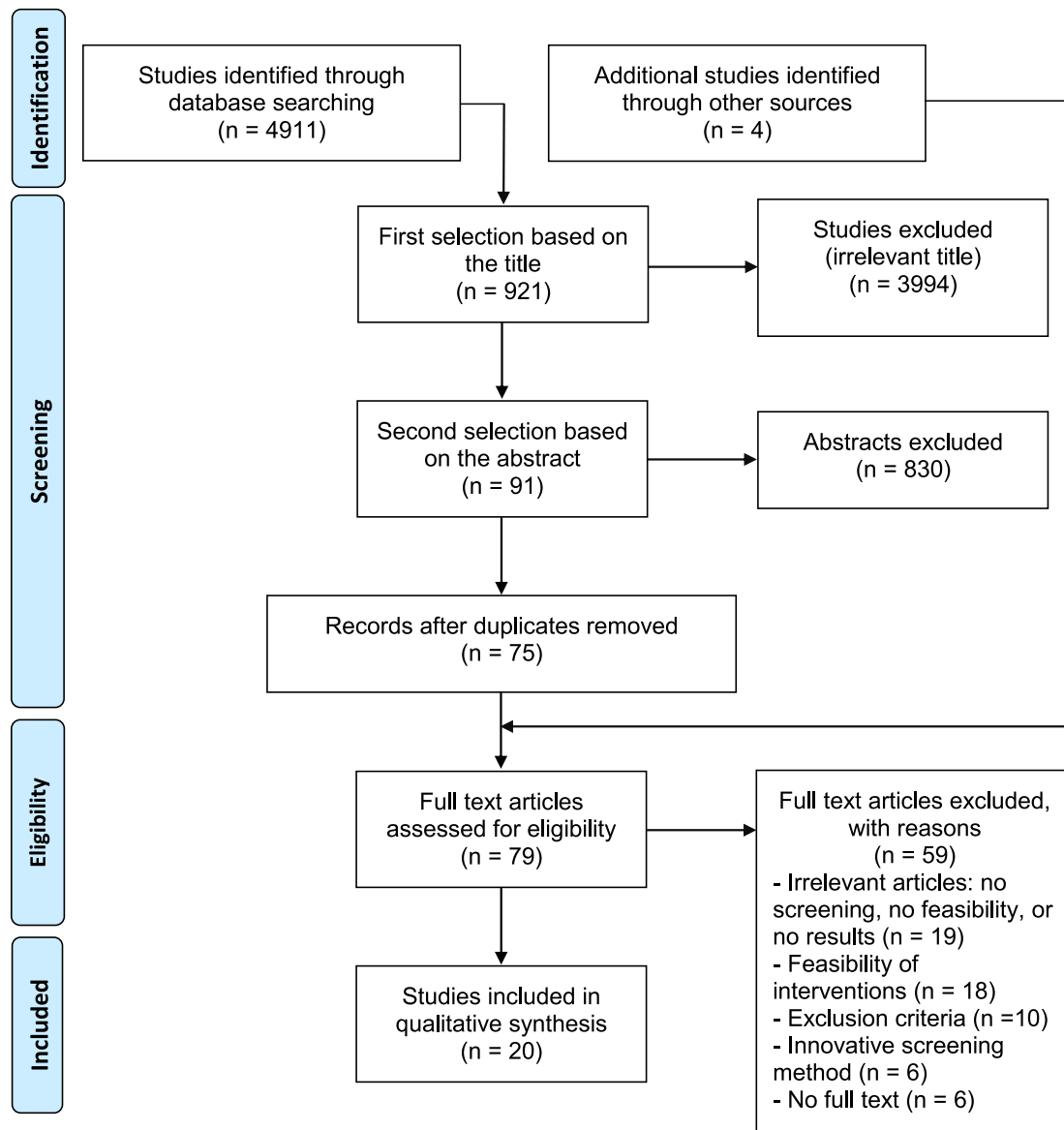


Fig. 1. Flowchart according to PRISMA.

Test) or CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble) (Pautrat et al., 2022). All screening tests were questionnaires that were either hetero-administered by a physician on behalf of the patient or self-administered and were tested in different locations either the waiting room or the patient's home. For some of these versions, different formats were studied. The ACASI (Audio Computer-Assisted Self-Interview) ASSIST appeared comfortable, easy, and fast to complete (Christoff et al., 2016; McNeely et al., 2016b; Spear et al., 2016). The computer version of AUDIT (Alcohol Use Disorders Identification Test) was considered easy-to-use and to understand (Chan-Pensley, 1999; Mulvaney-Day et al., 2018a). The touchpad versions of SUBS (Substance Use Brief Screen) (Bertholet et al., 2019b) and TAPS (Tobacco, Alcohol, Prescription medication and other Substance use) (MyTAPS) were acceptable and easy-to-use but elderly people found this MyTAPS format more difficult (Adam et al., 2019).

Traditional versions including paper, computer, touchpad and ACASI were the most common but, more innovative versions had been studied including the Interactive Voice Response (IVR) System (Rose et al., 2010). The different screening test formats and completion time are described in Table 2.

3.4. Feasibility for patients

The feasibility of substance use screening tests according to patients are described in Table 3.

In general, the screening tests took less than ten minutes to complete. ASSIST took the longest time to complete with average duration being around seven minutes (Christoff et al., 2016; McNeely et al., 2016b; Mulvaney-Day et al., 2018a; Spear et al., 2016; WHO ASSIST Working Group, 2002) whereas others such as SISAP (Screening Instrument for Substance Abuse Potential) and AUDIT-C (short version of AUDIT) could be completed in less than two minutes (Mulvaney-Day et al., 2018a). Tests screening for larger numbers of substances generally took longer to complete.

Studies used different words to define feasibility criterion. The term *ease of use* was commonly used but some studies analyzed the ease of response and the need for assistance with technical problems. Only ASSIST, AUDIT-C, CAGE (Cut-down, Annoyed, Guilty, Eye-opener), SUBS and TAPS were specifically studied and were considered easy-to-use (Adam et al., 2019; Bertholet et al., 2019b; Christoff et al., 2016; Farrell et al., 2009a; Spear et al., 2016; WHO ASSIST Working Group, 2002).

Table 1
Description of the twenty studies included in the systematic review.

Date	Author	Country	Screening test	Addiction	Sample
October 2019	A. Adam et al.	Eastern USA	myTAPS	Tobacco, alcohol, illicit drugs, prescription drugs	Adults \geq 18 years in urban and suburban primary care clinics
July 2019	M. Bertholet et al.	Lausanne, Switzerland	SUBS	Alcohol, tobacco, drugs, non-medical use of prescription medications	Adults in urban, suburban, or rural primary care practices
March 2018	N. Muvaney-Day		SISAP, DAST-10, TAPS, ASSIST, CAGE, CAGE-AID, AUDIT-C, SASQ, FAST, TICS, KMSK	All substance addictive disorder	Patients in primary care
September 2016	L-T Wu et al.	Baltimore, New York City, Richmond and Kannapolis, USA	TAPS	Tobacco, alcohol, prescription and illicit drugs	Adults \geq 18 years in primary care clinics
August 2016	L.D'Souza-Li et al.		ASSIST, CRAFFT, BSTAD	All substance addictive disorders	Adolescents in primary care clinics
July 2016	A.O. Christoff et al.	Curitiba, Brazil	ASSISTc (computer), ASSISTi (interview)	All substance addictive disorders	Students in two public and private universities
June 2016	S.E. Spears et al.	New York City, USA	ACASI ASSIST	All substance addictive disorders	Adults in a primary care clinic
February 2016	J. McNeely et al.	New York City, USA	ASSISTi, ACASI ASSIST	All substance addictive disorders	Adults in a primary care clinic
May 2014	S.M. Kelly et al.	Baltimore, Maryland, USA	BSTAD	Alcohol, tobacco, and drug use	Adolescents in three primary care clinics
September 2013	Z. Khadjesari et al.	Newcastle, Australia	AUDIT-c, eSBI	Alcohol	Adults in an outpatient department of a large public hospital
August 2013	C. Eyles et al.		AUDIT	Alcohol	Adults who are harmful or hazardous drinkers
April 2013	C.F. Rios Bedoya et al.	USA	CRAFFT	Alcohol	Adolescents (13–17 years old) in a pediatric or family medicine clinic
October 2011	P.H. Smith	Buffalo, New York, USA	Questions about tobacco and alcohol use	Tobacco and alcohol	Adults with low socioeconomic status in a primary care clinic
April 2010	G.L. Rose		AUDIT-C, one question about tobacco	Alcohol and tobacco	Patients in a suburban outpatient university-affiliated primary care clinic
March 2009	S.P. Farrell	Virginia, USA	eScreening CAGE	Alcohol	Adults living in a rural area
March 2009	S.P. Farrell	Virginia, USA	CAGE	Alcohol	Adults at a primary care clinic
March 2002	WHO Working Group	Australia, Brazil, Ireland, India, Israel, Palestinian Territories, Puerto Rico, United Kingdom, Zimbabwe	ASSIST	All substance addictive disorders	Adults in primary care and addiction clinics
February 2001	K. Nguyen et al.	Santa Monica Bay, California, USA	CARPS	Alcohol	Adults \geq 60 years, current drinkers
December 1999	H. Dyches et al.	Cleveland, Ohio, USA	AUDIT, CAGE, Drug-AUDIT	Alcohol	Adults in a primary care practice enrolled in a managed care program
April 1999	E. Chan-Pensley		AUDIT	Alcohol	Adults in the day-hospital program at the Alcohol Advisory Service

ACASI: Audio Computer-Assisted Self-Interview; ASSIST: Alcohol, Smoking and Substance Involvement Screening Test; AUDIT: Alcohol Use Disorders Identification Test; BSTAD: Brief Screener for Alcohol, Tobacco, and other Drugs; CAGE: Cut down, annoyed, guilty, eye-opener; CARPS: Computerized Alcohol-Related Problems Survey; CRAFFT: Car, Relax, Alone, Forget, Friends, Trouble; DAST: Drug Abuse Screening Test; FAST: Fast Alcohol Screening Test; KMSK: Kreek–McHugh–Schluger–Kellogg; SASQ: Single Alcohol Screening Questionnaire; SISAP: Screening Instrument for Substance Abuse Potential; SUBS: Substance Use Brief Screen; TAPS: Tobacco, Alcohol, Prescription medication and other Substance use; TICS: Two-Item Conjoint Screen.

The ease of comprehension, clarity, confusion, and the need for assistance were analyzed to assess screening test comprehension. Only ASSIST, AUDIT-C, BSTAD, CARPS and myTAPS (self-administered electronic version of TAPS) were studied for this criterion and all appeared understandable (Adam et al., 2019; Christoff et al., 2016; Kelly et al., 2014; McNeely et al., 2016b; Nguyen et al., 2001; WHO ASSIST Working Group, 2002). However, 12 % of patients (n = 201) using ASSIST and 25 % of patients (n = 500) using myTAPS requested assistance.

Positive feelings such as feeling comfortable, or negative feelings such as frustration and anxiety were studied for ASSIST, AUDIT-C, BSTAD, CAGE and SUBS (Bertholet et al., 2019b; Christoff et al., 2016; Farrell et al., 2009a; Kelly et al., 2014; Spear et al., 2016; WHO ASSIST Working Group, 2002). Patients were mostly positive about these tests, reporting that the tests were appropriate and not offensive or intimidating. The only negative feelings related to ASSIST and included a fear of being judged, feeling less comfortable about the cocaine and opioid questions, and not having the opportunity to explain their

substance use.

Acceptability was defined differently in different studies. In some studies, the term *well-accepted* was used whereas other studies defined acceptability as part of the overall feasibility. This involved analyzing the substance and format of the screening test including how honestly the patient answered and font size. ASSIST and SUBS were considered well-accepted or highly acceptable according to their studies (Bertholet et al., 2019b; Christoff et al., 2016; McNeely et al., 2016b).

Some studies analyzed patient format preference revealing a frequent preference for self-administered versions, especially electronic ones (Adam et al., 2019; Bertholet et al., 2019b; Chan-Pensley, 1999; Christoff et al., 2016; Kelly et al., 2014; McNeely et al., 2016b; Muvaney-Day et al., 2018a), even by elderly people (Nguyen et al., 2001), or by using cell phone text message (Ríos-Bedoya and Hay, 2013).

Table 2

Format of the sixteen substance use disorder screening tests included in the systematic review.

Screening test	Number of questions	Interview format	Self-administration format	
			Paper format	Technologies or innovations (telephone, tablet, computer)
ASSIST (Alcohol, Smoking and Substance Involvement Screening Test)	8	<u>Administration:</u> 5–15 min (depending on the number of substances used) Average completion time: 7 min Median time to complete: 4 min Strengths and positive aspects: 96 % enjoyed the interview(very) easy to administer (77 %) Observation of non-verbal cuesOpportunity for support (empathetic listening, explaining screening questions, providing advice)Opportunity to explain details about their consumption (important for some participants)	ND	Computer (ASSIST-C): Administration: mean time to complete: 5–6 min (from 3 to 14 min) ACASI ASSIST on tablet computer (touch screen): Administration: Mean time to complete = 5.2 min (1.6 – 14.8 min) Median time to complete = 3.7 min (0.7 – 15.4 min) Strengths and positive aspects for patients: Comfortable, easy, simple, fast, “saving paper” No trouble to complete a tablet computer LimitationsRequested assistance (5.3 % needed technical assistance or had difficulty with comprehension or reading)
AUDIT-10 (Alcohol Use Disorders Identification Test)	10	Administration time: 3 min	Strengths: For few patients, easier to understand and complete, less intimidating Receiving a postal AUDIT questionnaire: low cost and acceptable	COMPUTER Strengths: Computerised version worked well and were easy to use and understand for the majority of patients No problems using on a computer Limitations for a few patients: More difficult to understand and completeMore intimidating and (very) unacceptable TELEPHONE IVR (interactive voice response) system Strengths: Questions clear, process simple and straightforward Results helpful for primary care providers (50 %, identification of some unexpected health problems) Limitations: For a few patients, the responses didn't represent their drinking. Adolescents preferred iPad self-administration.
AUDIT-C (Alcohol Use Disorders Identification Test)	3	Administration time: 1–2 min	ND	COMPUTER: eScreening including CAGE on a portable touch-screen computer: Strengths:Easy to use (90 %)Useful (85 %) Little anxiety or frustration Very little difficulty with the computer ND
BSTAD (Brief Screener for Alcohol, Tobacco, and other Drugs)	15–24	ND	ND	Adolescents preferred iPad self-administration.
CAGE (Cut down, Annoyed, Guilty, Eye-opener)	4	ND	Self-administration: <2 min	COMPUTER: eScreening including CAGE on a portable touch-screen computer: Strengths:Easy to use (90 %)Useful (85 %) Little anxiety or frustration Very little difficulty with the computer ND
CAGE-AID (same questions with addition of “drug use”)	4	ND	ND	ND
CARPS (Computerized Alcohol-Related Problems Survey)	18	ND	Optical character recognition is used to read and store patient responses, manual data entry is also possible.	ND
CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble)	6	ND	ND	Test messaging survey
DAST 10 (Drug Abuse Screening Test)	10	ND	ND	ND
FAST (Fast Alcohol Screening Test)	1–4	ND	ND	ND
KMSK (Kreek–McHugh–Schluger–Kellogg)	28	Administration time: 5–10 min (depending on the number of substances used)	ND	ND
SASQ (Single Alcohol Screening Questionnaire)	1	ND	ND	ND
SISAP (Screening Instrument for Substance Abuse Potential)	5	Administration and scoring: <1 min	ND	ND
Single -Question Screening Test for Drug Use	1	ND	ND	ND

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Table 2 (continued)

Screening test	Number of questions	Interview format	Self-administration format	
			Paper format	Technologies or innovations (telephone, tablet, computer)
SUBS (Substance Use Brief Screen)	4	ND	ND	TOUCHPAD: Administration: mean time < 2 min (90.8 s) Strengths: Easy to use Useful questions High acceptability (77.2 % reported that their friends would be willing to use it) MyTAPS (self-administered electronic version of the TAPS tool) with a touchpad: Administration time: median time to complete 4 min (90 % < 7 min) Strengths: Easy to use (98 %), little audio guidance (18 %) Limitations: Requested assistance (25 %), because of difficulty using the tablet, comprehension problems and technical issues ND
TAPS (Tobacco, Alcohol, Prescription medication and other Substance use)	9	Administration time: median time to complete = 2 min (90 % < 3 min)	ND	
TICS (Two-Item Conjoint Screen)	2	ND	ND	ND

ND = No Data available in the article.

3.5. Feasibility for primary care physicians

Among the criteria identified, some were similar to those identified among patients such as ease of use, acceptability and format preference. However, others such as test administration duration and usefulness were specific to physician feasibility (Table 4).

Extensive research was found into the administration time for interview versions with some tests such as SASQ (Single Alcohol Screening Questionnaire), TICS (Two-Item Conjoint Screen) and SISAP taking less than a minute. However, little analysis is available for the other criteria.

ASSIST was the most evaluated test with information for all criteria. Overall, it was deemed to be useful, easy-to-use, and acceptable. However, physicians felt it would be difficult to incorporate into primary care due to its length and complex scoring system (Eyles et al., 2013; McNeely et al., 2016b; Mulvaney-Day et al., 2018a; Spear et al., 2016). CAGE-AID (CAGE-Adapted to Include Drug use) was reported to be brief and easy to score. TAPS, a healthcare professional administered test in the form of electronic health record-integrated screening, was evaluated in a physician feasibility study following the COVID-19 pandemic. It was found to be easy-to-use with a high level of acceptability, but some felt it was not very user friendly (Moore et al., 2021). There is little information available for the other tests.

4. Discussion

This systematic review is the first to identify studies on the feasibility of performing screening tests for substance use disorders in primary care settings. Despite general practitioners being the main healthcare professional responsible for screening for substance use disorders in primary care, few studies evaluated feasibility for addictive disorder screening tests from the physician's point of view. Twenty articles that evaluated the feasibility of 16 addictive disorder screening tests were identified. Among included screening tests, which had undergone feasibility testing, all could be used to screen for unhealthy substance use or substance use disorders, but none screened for non-substance addictive behaviors. Almost all the tests had a hetero-administered version and many had a self-administered version (paper or electronic format). Overall, the TAPS tool seems to provide a good balance between ease of use, brevity of administration and more extensive screening for substance use disorders. Notably, many well-known tests,

such as the Fagerström, FACE (Fast Alcohol Screening Test) and CAST (Cannabis Abuse Screening Test) tests, were not included in this review because they had not undergone feasibility testing in primary care settings. Also, although this study assessed the feasibility of using screening tests in the context of GP workflow, it did not assess their ability to discriminate between unhealthy use or dependence. However this has been previously reported (Pautrat et al., 2022).

Feasibility studies assess whether an intervention, such as a screening test, can work in practice and therefore focuses more on the process than the outcomes (Ormond and Cohn, 2015). Evaluating feasibility should be as routine as validity studies. It is important that screening tests with proven validity in primary care are also feasible since the current addiction guidelines reiterate that primary care is an essential place for early screening (Moyer, 2013; Rahm et al., 2015).

However, despite existing recommendations for implementing feasibility studies (Pearson et al., 2020), there are currently no guidelines for conducting feasibility studies for screening tests in primary practice. This lack of guidance was highlighted in this review as the studies included had varying study designs. Similar to validity studies, feasibility study designs included a range of simple objective measures to analyze feasibility, such as administration or completion time (Mulvaney-Day et al., 2018b) response rate (McNeely et al., 2019a), and more complex methods to analyze positive and negative feelings about the tests. Different methods were also used to assess feasibility for satisfaction questionnaires, short surveys (Adam et al., 2019; Bertholet et al., 2019b; Chan-Pensley, 1999; Christoff et al., 2016; Farrell et al., 2009a; McNeely et al., 2016b; Rose et al., 2010; Wu et al., 2016), or focus groups (Eyles et al., 2013; Rose et al., 2010; Spear et al., 2016; WHO ASSIST Working Group, 2002). Furthermore, the concept of feasibility was heterogeneous between the included studies with diverse terms and categories used. This heterogeneous approach makes comparing results from different studies difficult. For example, *comprehension* could have several meanings and be analyzed differently such as a Likert scale to score the level of understandability (Adam et al., 2019; Christoff et al., 2016), the percentage of participants who understood the test (Christoff et al., 2016) or the number which requested assistance for comprehension problems (McNeely et al., 2016b).

In the absence of detailed guidelines, this review could serve as a basis for listing the criteria to assess screening test feasibility in primary care (Table 5). Furthermore, it could prove interesting to explore healthcare professional and patient definitions of feasibility in the

Table 3

Patient opinions about the different feasibility criteria for each included screening test. Screening tests with no data for any of the criteria are not shown in the table.

Screening test	Screening test version where applicable	Completion time	Ease of use	Comprehension	Positive feeling	Negative feeling	Acceptability	Format preference
ASSIST (Alcohol, Smoking and Substance Involvement Screening Test)	ASSIST-C	Mean time: 6 min (3 – 14 min)	Easy to answer	Easy to understand	Not intimidating	ND	Acceptable	ASSISTi versus ASSISTc: More preference for ASSISTc
	ASSIST-I (interviewer version)	Mean time: 7 min (2 – 13 min) Median time: 4.4 min (1–9 min)	“Easy to answer” 81 % “Length just right”	Easy to understand 78 % understood questions without difficulty Confusion with several items 12 % requested assistance (100 % comprehension problem)	96 % enjoyed being interviewed 98 % “questions not offensive” and “appropriate” Tobacco/alcohol questions: “comfortable” Not intimidating to answer Allows support (empathetic listening, explanations and advice) Allows explanations of substance use history or consumption details) Not intimidating	Less “comfortable” with ASSIST questions, fear of being judged and embarrassed if illicit drug user Cocaine and opioid questions: less comfortable No opportunity to explain substance use: underestimated consumption for few patients	Acceptable All substances were very important for physicians to know about (on average)	ASSISTi easier to understand ASSISTi versus ACASI: 85 % preferred the computer to an interview or had no preference
	ACASI ASSIST	Mean time: 5 min (1.5 – 18 min) Median time: 3.7 min (1 – 15 min)	Easy to use, simple, fast No technical challenge, no trouble completing on a tablet computer	5 % requested assistance (35 % for comprehension or reading problems)	Overwhelmingly comfortable Saves paper	ND	Well-accepted	
AUDIT-10 (Alcohol Use Disorders Identification Test)		ND	ND	ND	ND	ND	Receiving a postal AUDIT questionnaire: acceptable	Computerised versions: work well, no difficulty for the majority. Only 11 % found the computer version more difficult to understand, 9 % found it more difficult to complete and 14 % felt it was more intimidating than the paper version. ND
AUDIT-C (Alcohol Use Disorders Identification Test Consumption)		Self-administered: 1–2 min	56–58 % (very) low level of computer skills needed 94–95 % font large enough to read	85–86 %: clear questions	95–98 %: honest response 95–96 %: privacy respected	ND	ND	ND
BSTAD (Brief Screener for Alcohol, Tobacco, and other Drugs)		ND	ND	99.6 % felt the questions were easy to understand	93.9 % were comfortable answering the questions 89.8 % would be willing to answer questions like these at the doctor’s every year	ND	ND	42.3 % would prefer to answer themselves on an iPad instead of being interviewed.
CAGE (Cut down, Annoyed, Guilty, Eye-opener)		Self-administered: <2 min		ND	No concerns about privacy	Little anxiety or frustration	ND	ND

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Table 3 (continued)

Screening test	Screening test version where applicable	Completion time	Ease of use	Comprehension	Positive feeling	Negative feeling	Acceptability	Format preference
CARPS (Computerized Alcohol-Related Problems Survey)		Median time: 15 min	ND	93 % felt it was easy to understand 96 % had no difficulty completing the test		ND	ND	ND
DAST 10 (Drug Abuse Screening Test)		Self-administered: <5 min	ND	ND	ND	ND	ND	ND
SISAP (Screening Instrument for Substance Abuse Potential)		<1 min (including scoring)	ND	ND	ND	ND	ND	ND
SUBS (Substance Use Brief Screen)		Mean time: under 2 min**	Easy to use in general**	ND	Questions useful** Satisfaction**	2 % felt uncomfortable	Highly acceptable**	
TAPS (Tobacco, Alcohol, Prescription medication and other Substance use) (interview administered)		Median time: 2 min 90 % in 3 min of less Depends on number of substances used	8 % requested assistance	ND	ND	ND		53 % had no preference between myTAPS or TAPS
myTAPS (self-administered electronic version of the TAPS tool)		Median time: 4 min 90 % in 7 min or less depending on number of substances used	98 % easy to use (on a tablet) 18 % audio guidance 7.8 % had difficulty using the tablet. 6.5 % had a technical issue. 3.8 % had several difficulties.	6.9 % had comprehension problems.	ND	ND	27.5 % preferred myTAPS to TAPS	

Screening tests with no data for any of the criteria are not shown in the table. ** evaluation of SUBS + several physical activity questions. ND = No Data for this category reported in the article; ACASI: Audio Computer-Assisted Self-Interview.

context of screening tests using qualitative studies, possibly including the Delphi consensus method (Dalkey, 1969; Okoli and Pawlowski, 2004).

This review reveals that there has been more research into feasibility for patients than for physicians. This is surprising, as assessing how easy physicians find a screening test to use in daily practice remains the first step in evaluating feasibility. Furthermore, in the literature, there are more barriers to screening among physicians than patients (M. Johnson et al., 2011; McNeely et al., 2018; Pautrat et al., 2019a; Yarnall et al., 2003). Feasibility studies focusing on physicians could help to identify possible solutions to overcome physician-related barriers.

One possible solution to overcome physician-related barriers in primary care includes innovative screening tests or formats which could improve feasibility to improve screening rates. Some of these innovations were assessed in studies included in this review. For example, eScreening tools (combining audio computer-assisted touchscreen technology and existing psychometrically tested screening instruments) which integrate screening into the routine workflow, for example nurse receptionists systematically screening patients (Farrell et al., 2009b). However, it has been shown that changing the wording of questions in validated screening tests in an effort to improve feasibility by hastening the process or reducing perceived patient discomfort alters screening quality (Bradley et al., 2011; Williams et al., 2013).

Another solution could be to help physicians alter professional routines and provide training to make screening tests easier and quicker to use. Research is being conducted to test whether training GPs could improve early substance use disorder screening rates which in turn could ease the burden of addiction-related disease (Rosário et al., 2019). However, increasing the use of screening tests for early substance use disorders detection will only be successful if patients are willing to talk about their addiction. More research is needed into possible strategies, resources and skills physicians could use to encourage patients to start discussing addiction (McNeely et al., 2021).

Also, having evaluated screening test validity and feasibility in primary care, the impact of their implementation in daily practice needs to be assessed in the long term. In the context of primary care, few clinical prediction tools have been subjected to impact analysis (Sanders et al., 2017; Wallace et al., 2016). This is an area which needs further research.

Despite the rigor of the systematic method used in this literature review, it is possible that some studies may not have been identified as the research equation produced a large number of studies, which when filtered may have led to errors. For example, many studies discussed the feasibility of a test but only analyzed the brevity, the ease of recall, the response rate or administration time (Farrell et al., 2009b; McNeely et al., 2019b; Mulvaney-Day et al., 2018b). The search equation did not include the keyword “hazardous and harmful substance use”, which

Table 4

Physician opinions about the different feasibility criteria for each included screening test. Screening tests with no data for any of the criteria are not shown in the table.

Screening test	Screening test version (where applicable)	Administration time	Applicability	Usefulness	Convenience / Ease of use	Acceptability	Format preference
ASSIST (Alcohol, Smoking and Substance Involvement Screening Test)	Original ASSIST with interviewer	5–15 min depending on number of substances used	97 % participants probably interested Feasible and appropriate	Enables non-verbal cues to be observed	Difficult to incorporate into primary care due to: The complexity of the scoring system Its length	100 % probably not offended by the questions 100 % probably not withholding information	Successfully adapted for ACASI
	ASSIST-C	ND	ND	May be useful for early detection in college students	77 % (very) easy to administer 3 % very difficult to conduct ND	ND	ND
	ACASI ASSIST	5 min (1.5 – 15 min) 3 min	ND	ND	ND	ND	ND
AUDIT-10 (Alcohol Use Disorders Identification Test)			ND	ND	Required provider scoring	ND	Computerised versions work well
AUDIT-C (Alcohol Use Disorders Identification Test Consumption)		1–2 min	ND	ND	ND	ND	ND
CAGE (Cut down, Annoyed, Guilty, Eye-opener)		Brief	ND	ND	ND	ND	ND
CAGE-AID (CAGE-Adapted to include drug use)		< 2 min	Easy to recall	ND	Brevity Easy scoring	ND	ND
FAST (Fast Alcohol Screening Test)		< 2 min		ND	ND	ND	ND
KMSK (Kreek–McHugh–Schluger–Kellogg)		5–10 min (depending on the number of substances used)	ND	ND	ND	ND	ND
SASQ (Single Alcohol Screening Questionnaire)		< 1 min	ND	ND	ND	ND	ND
SISAP (Screening Instrument for Substance Abuse Potential)		<1 min (including scoring)	ND	ND	ND	ND	ND
Single Question Screening Test for Drug		< 1 min	ND	ND	ND	ND	ND
TAPS (Tobacco, Alcohol, Prescription medication and other Substance use)		ND	ND	“Some patients can’t give you a clear-cut answer, they have to add a story in there”	“It works well... 80 % of the time”	GPs were “pretty open” but the test was “not very user friendly” High level of acceptability	ND
TICS (Two-Item Conjoint Screen)		< 1 min	ND	ND	ND	ND	ND

ND = No data. Screening tests with no data for any of the criteria are not shown in the table.

Table 5

Possible criteria which could be used to assess screening test feasibility from the patient or healthcare professional perspective.

Possible patient feasibility criteria	Possible healthcare professional feasibility criteria
Completion time	Administration time
Ease of use	Applicability
Comprehension	Usefulness
Positive feelings	Convenience/Ease of use
Negative feelings	Acceptability
Acceptability	Format preference
Format preference	

may result in other publications being missed, given that the recommended screening tools for substance use are validated to detect hazardous and harmful substance use and not just substance use disorders.

It should be noted that several studies were excluded from the final selection because they were conducted among First Nations people, a

very specific population which does not represent the general population. Sometimes, screening test feasibility was coupled with the brief intervention feasibility meaning the test feasibility alone could not be evaluated (Gibson et al., 2021). Studies on multimodal tests exploring addictions among other areas were excluded because it was not possible to judge the feasibility of the addiction screening section alone. This explains the absence of well-known tests such as MINI (Mini International Neuropsychiatric Interview) for example.

The heterogeneity of primary care settings has been an additional difficulty. Half of the selected studies were performed in the United States, where the primary care system is unique with primary care clinics in which nurse receptionists may perform some or all of the screening (Farrell et al., 2009b; Seale et al., 2008).

5. Conclusion

This review revealed 16 substance use disorder screening tests, which have undergone feasibility testing in primary care. All included

tests screened for substance use disorders, but none screened for non-substance addictive behaviors. More research is needed into understanding feasibility to improve early screening in primary care. This may involve innovative screening methods. Furthermore, guidelines for conducting feasibility studies of screening tests in primary care are required to standardize these studies and enable result comparison.

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Declaration of competing interest

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

Data availability

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