Feasibility of a Two-Part Substance Use Screener Self-Administered by Patients on Paper: An Observational Study

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Table of Contents

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Abstract

Background: Measurement based care (MBC) utilizes patient reported outcome measures (PROMs) to screen for mental health symptoms and assess symptom change over time. While PROMs are increasingly being integrated into electronic health record systems, paper-based PROMs continue to be utilized, and it is unclear if electronic and paper administration are equivalent when a PROM was initially developed for electronic administration.

Objective: This study aimed to examine the feasibility of a patient-administered two-part substance use screener, the Tobacco, Alcohol, Prescription medication, and other substances (TAPS) screener, originally created for electronic administration, on paper in an urgent care behavioral health clinic within an urban, public safety net hospital.

Methods: Research staff examined screener response patterns.

Results: Out of the 507 new patients, 313 completed the TAPS (61.7%). Among those who completed the TAPS, 237 (75.7%) did not follow the instructions correctly, and most answered more questions than needed.

Conclusions: When selecting PROMs for MBC it is important to consider necessary adaptations based on how the PROM will be administered.

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Original Manuscript

Introduction

Measurement based care (MBC) is a practice in clinical care that utilizes patient reported outcome measures (PROMs) to identify individuals at risk for a disorder, quantify symptoms, and monitor symptoms over time [1]. PROMs can be self-administered and completed by patients on paper, or electronically on a device or web-based platform [2]. Although paper-based PROMs are quite accessible, namely because they do not require modifications to the electronic health record (EHR) to facilitate electronic administration [3], internet access, or technological literacy [2], there has been a shift within healthcare toward electronic administration of PROMs [3]. The shift toward electronic self-administration has followed the large-scale adoption of EHRs [4] since these systems can identify patients who are due to complete PROMs, streamline administration, improve ease of access to patient PRO responses for clinical decision making, and monitor quality at the clinic and healthcare system level [5,6]. Indeed, integration of PROM into the EHR addresses important implementation barriers to MBC in clinic practice since PRO responses are immediately available to clinicians during the visit, results are easily interpreted within systems that automatically score responses, and results can be monitored within the EHR over time [6].

As electronic administration of PROMs became more common, new substance use screening questionnaires were specifically developed and validated for electronic administration [7,8,9,10]. To minimize the burden associated with completing a PROM, these questionnaires begin with a limited number of questions and skip or reflex to additional questions based on an individual's initial responses [7,8,9,10]. One of these two-part questionnaires, the Tobacco, Alcohol, Prescription Drugs, and other Substances (TAPS) screener, was also successfully integrated into the EHR, and implemented in the primary care setting with electronic self-

administration on tablets [11].

While electronic administration of PROMs that is automatically integrated with the EHR may ease patient and staff burdens associated with MBC, this system of screening may not be accessible in all healthcare settings. This type of system requires an information technology team that can help build and maintain the electronic PRO system which can take a significant amount of time and expense, and can also lead to recurring technological challenges once implemented [2,12,13]. In health safety net hospitals or federally qualified health centers, there may be fewer resources to incorporate the necessary information technology changes needed to systematically screen patients using electronic devices integrated with the EHR [14]. With this in mind, the most feasible screening option in these settings may be to continue self-administration of PROMs on paper.

However, very little is known about the feasibility of administering a PROM on paper that was specifically developed to be administered electronically. We therefore aimed to examine questionnaire completion rates and adherence to questionnaire instructions when new patients completed the two-part substance use screener (TAPS) on paper in an outpatient behavioral health clinic within a health safety net hospital. The clinic chose to use the TAPS screener because they were evaluating individuals at high risk for a co-occurring substance use disorder, and needed a PROM that broadly assessed for multiple substances within one questionnaire to inform the initial treatment plan and referrals.

Methods

New patients ages 18 and older presenting to an urgent care behavioral health clinic within an urban, public safety net hospital between August 2021 and March 2022 were given a paper packet by front desk staff when they checked in for their appointment. This referral-based clinic provided urgent behavioral health services to adults experiencing a mental health crisis or need medication to treat a psychiatric disorder or substance use disorder. The paper packet is part of standard care in this clinic and contained a one-page intake form, and three PROMs screeners assessing depression (the

patient health questionnaire-9) [15], anxiety (the generalized anxiety disorder-7) [16], and substance use (the TAPS) [7] to complete prior to their appointment. PROMs were administered on paper because there were no resources in this setting to administer PROMs electronically and immediately provide clinicians with the questionnaire results.

Research on survey design and presentation of questions on paper was used to derive the paper version of the TAPS from the online version (Multimedia Appendix 1) [17]. The TAPS has two-parts, part 1 of the TAPS assesses tobacco use, alcohol use, prescription medication misuse, and illicit substance use in the past 12 months. When use of a substance is endorsed, up to four additional yes/no questions are asked in part 2 for each substance endorsed to assess for problems associated with use in the past 3 months (up to 27 questions total). In part 2 a yes response is scored a 1 and a no response is scored a 0. A score for each substance assessed in part 2 is calculated with corresponding categories of no risk (total score 0), problem use (total score 1), or higher risk (total score ≥2). To mimic the electronic questionnaire branching logic that either skips or reflexes to additional questions based on responses in part 1, written instructions were provided that indicated which question(s) respondents should answer in part 2 based on their response to the questions in part 1.

Front desk staff instructed patients to complete the packet, and to hand it to their clinician when they were called into their appointment. Staff provided these instructions in English and Spanish and the packets were provided in both languages. The goal of having patients complete the packet prior to their appointment was for their clinician to review the PRO responses and utilize this information during the appointment to inform the initial treatment plan and referrals. Following the appointment, clinicians would return the packet to a designated shelf in the waiting room for the research staff to collect. Research staff reviewed returned packets and scored them if this had not already been done by a clinician. Research staff maintained a de-identified database that detailed completion and error rates of those who had completed some, all, or none of the PROMs screeners. A

screener was considered incomplete if one or more questions were skipped.

More detailed information was collected regarding completion patterns for the TAPS screener. This included whether individuals accurately completed the TAPS according to the instructions and whether or not their TAPS score was impacted based on how they responded. For example, if someone answered ‘never’ to use of a substance in part 1, no follow up part 2 questions needed to be answered for that substance. However, when the TAPS was completed on paper, respondents saw all of the potential part 2 questions. An example of not following the instructions includes a respondent who selected ‘never’ to the part 1 question, and then proceeded to answer follow up questions in TAPS part 2 which were not necessary (Figure 1). An example of the TAPS score being impacted by not following instructions included when a respondent selected ‘never’ in part 1, and then selected ‘yes’ to a follow up question they should have skipped in part 2 (Figure 2).

Since the de-identified database created to track PROMs completion and adherence to questionnaire instructions did not include patient demographic information, a retrospective EHR chart review was conducted to collect this information. Demographic information for all new patients who were seen in the clinic while the PROMs were tracked was extracted from the medical record and included age, race, ethnicity, sex, and type of insurance. These demographics variables were classified according to how these items were categorized in the EHR (Table 1).

Ethical Considerations

The Boston University Medical Campus/Boston Medical Center Institutional Review Board approved this research and deemed this study exempt and not requiring informed consent as all information was de-identified and there was no direct interaction with human subjects (IRB H-43045).

Results

Table 1.

Demographic characteristics of new patients seen in an urgent care behavioral health clinic between

August 2021 and March 2022 when observational data was collected on the completion patterns for the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire when self-administered on paper to patients (n= 507)

	n (%) or Mean (SD)
Sex	
Male	258 (50.9%)
Female	248 (48.9%)
Unknown	1 (0.2%)
Race	
White	152 (30.0%)
Black / African American	212 (41.8%)
Other (Including Hispanic or Latino)	77 (15.2%)
Asian	25 (4.9%)
Native Hawaiian / Pacific Islander	1 (0.20%)
Multiple	11 (2.2%)
Declined / Not Available	29 (5.7%)
Ethnicity	
Not Hispanic/Latino	403 (79.5%)
Hispanic/Latino	96 (18.9%)
Unknown	8 (1.6%)
Age (years)	38.7 (14.6)
Insurance	
Public	411 (81.1%)
Private	82 (16.2%)
Uninsured	5 (1.0%)
Unknown	9 (1.8%)

A total of 507 new patients were seen in the clinic between August 2021 and March 2022. These patients had a mean age of 38.7 ± 16.6 years and were 50.9% male (n=258). They were predominantly Black (212, 41.8%), white (152, 30.0%), and non- Hispanic/Latino (403, 79.5%). Most of the patients were publicly insured (n=411, 81.1%).

Insert Figure 3

Out of the 507 new patients, 353 returned their paper packets (69.6%), and 313 of the 507

patients completed some or all of the TAPS screener (61.7%). Among those who completed some or all of the TAPS, 76 (24.3%) completed the full screener accurately according to the instructions on the paper form. Of the 237 individuals who did not complete the TAPS paper form according to the instructions, 166 (70.0%) answered more questions than required, and 71 (30.0%) did not answer required questions.

Out of the 166 individuals who answered more questions than required in TAPS part two, most did not over-answer in a way that affected their TAPS score (n=128, 77.1%) (i.e. responding 'Never' to the part 1 question and then 'Never' to the part 2 follow up questions). However, 22.9% (n=38) of those who answered more questions than needed responded to follow up questions in TAPS part two in a way that contradicted their response in part one of the screener, and ultimately affected their overall TAPS score.

Of the 71 patients who skipped needed questions on the paper TAPS form, 65 (91.5%) of these respondents did not have their TAPS score impacted by the questions they did respond to. For these individuals, the TAPS was not fully complete. However, for the questions they did answer, they answered more follow up questions than needed in TAPS part two, but not in a way that was contradictory to the questions they did respond to in TAPS part one. There were six (8.5%) individuals who did not complete the entire TAPS, but whose score was impacted by the questions they did complete. Each of these individuals, for the questions they did answer, answered more follow up questions than needed in TAPS part two and responded in a way that contradicted their part one TAPS response.

Discussion

The goal of this study was to examine the feasibility of administering the two-part TAPS questionnaire, originally created for electronic administration [7], on paper for patient self-administration. Many of the new patients who came to the outpatient behavioral health clinic for urgent evaluation completed the screener (61.7%). The majority of these patients, 75.7%, did not

adhere to the questionnaire instructions and answered more or less of the questions required. Furthermore, some of the patients who did not adhere to the questionnaire instructions, 18.6%, provided responses that contradicted their initial responses which subsequently affected their overall score, and the corresponding category of level of risk associated with substance use.

Our finding that many patients in an outpatient behavioral health clinic completed the substance use PROM is similar to existing literature on substance use screening in the behavioral health setting. A recent systematic review examined this topic and found substance use screening rates in adult behavioral health clinics ranged from 48% to 100% [18]. Most of the studies in this review did not report on the method of screening administration, but the one study with paper administration reported screening 74.9% of patients [19]. Furthermore, our paper TAPS screening rate of 61.7% is similar to the rate of electronic TAPS screening reported in primary care (71.8%) [20].

Our finding that patients did not adhere to questionnaire instructions to either skip or answer additional questions is consistent with the broader literature that has shown errors of commission and omission are common when questionnaires that include skip instructions are self-administered on paper [21]. Similar to our findings, another study that reported on adherence to questionnaire instructions when individuals were asked questions about alcohol use, illicit drug use, and other sensitive health behaviors on paper, also found it was more common for respondents to answer questions that they did not need to answer and less common for respondents to answer questions in a contradictory way [22].

Although it is unclear why patients in our sample did not follow the questionnaire instructions when self-administering a two-part PROM on paper, other research suggests that health literacy may influence accurate completion of self-administered PROMs. Health literacy refers to one’s ability to utilize and comprehend information in a way that is beneficial to their health [23]. Those with lower health literacy may have a more difficult time understanding and communicating

health related needs [23]. For example, Al-Tayyib, et al. [22] found individuals who scored the lowest on health literacy, when compared to those who scored highest, were eight times more likely to answer questions about alcohol in a contradictory way when the questionnaire was self-administered on paper. Furthermore, Porter, et al. [24] observed that participants with low health literacy found it more burdensome to answer questions related to their health on paper when compared to participants with high health literacy. Since safety-net hospitals typically serve marginalized and/or underserved populations [25], of which generally experience lower health literacy rates as compared to non-marginalized populations [26], future work should collect information from patients in this setting while they complete the two-part PROM to elicit feedback on the design and format of the paper questionnaire. This feedback will be important to guide strategies to support paper administration of a two-part PROM that ensure accurate questionnaire completion and minimize the burden to patients.

This study has a number of methodological limitations. Although research staff used a standardized form to track PROMs completion that allowed for free text responses to describe patterns observed, they did not systematically categorize the types of errors made in TAPS screener completion until clear patterns began to be observed. Additionally, it is unknown why some individuals did not respond to the TAPS screener. Since demographic data for patients who completed the paper TAPS was not documented on the tracker, the study team is also missing potentially meaningful demographic trends in those who did and did not complete the paper TAPS. Further, it is evident from previous literature that health literacy plays a role in how individuals complete self-administered health screeners on paper and literacy was not assessed in this study. This study was also conducted in one unique behavioral health urgent care setting, and therefore might not be generalizable to other behavioral health settings or primary care.

Despite these limitations, our data supports the feasibility of screening for substance use on paper in the outpatient behavioral health setting. Our data also highlights the challenge of poor

adherence to questionnaire instructions when administering a two-part substance use screener originally developed for electronic administration in a health safety net hospital setting. In the future, it is important to consider this challenge when adapting two-part electronic screening questionnaires to paper, and to implement strategies that minimize patient burden and ensure that accurate information is collected to inform an individual's treatment plan. For two-part screeners like the TAPS, it may be that part 2 needs to be completed with trained staff after a patient self-administers part 1.

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Generative Artificial Intelligence was not used in any portion of manuscript writing.

Data Availability The data sets generated during and/or analyzed during this study are available from the corresponding author on reasonable request.

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Conflict of Interest Amy Yule has research funding from the NIH, the Doris Duke Charitable Foundation's COVID-19 Fund to Retain Clinical Scientists collaborative grant program through support from the John Templeton Foundation, and NCATS/NIH through the Boston University Center for Clinical and Translational Science Institute. She also has funding from the Jack Satter Foundation for clinical program development. She is a consultant to the Gavin House and BayCove Human Services (clinical services), as well as the American Psychiatric Association's PCSS Sub-Award.

Timothy Wilens has received research funding from the National Institutes of Health through the HEAL Initiative under award number 1UG3DA050252-01 and 4UH3DA050252-02. Dr. Wilens

works as a consultant for Ironshore, the Gavin Foundation, Bay Cove Human Services, the US National Football League, the US Minor and Major League for Baseball, and White Rhino/3D Therapy LLC. Dr. Wilens also serves as a co-editor for the journal Elsevier Psychiatric Clinics of North America (ADHD). In addition, he has published the book Straight Talk About Psychiatric Medications for Kids with the Guilford Press and co-edited the textbook ADHD in Adults and Children with the Cambridge University Press.

Joanna Kramer, Vinod Rao, and Richy Villa have nothing to disclose.

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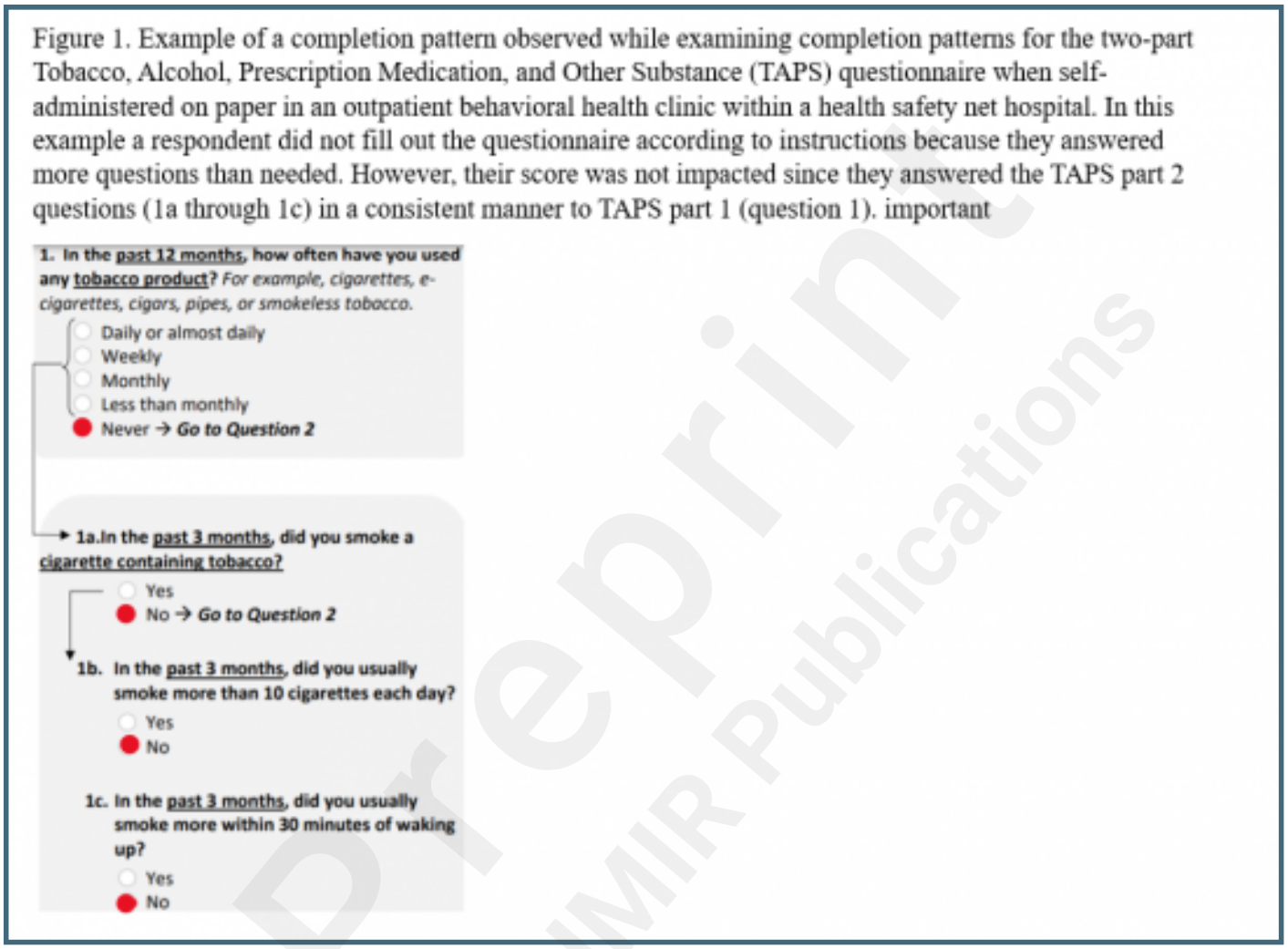
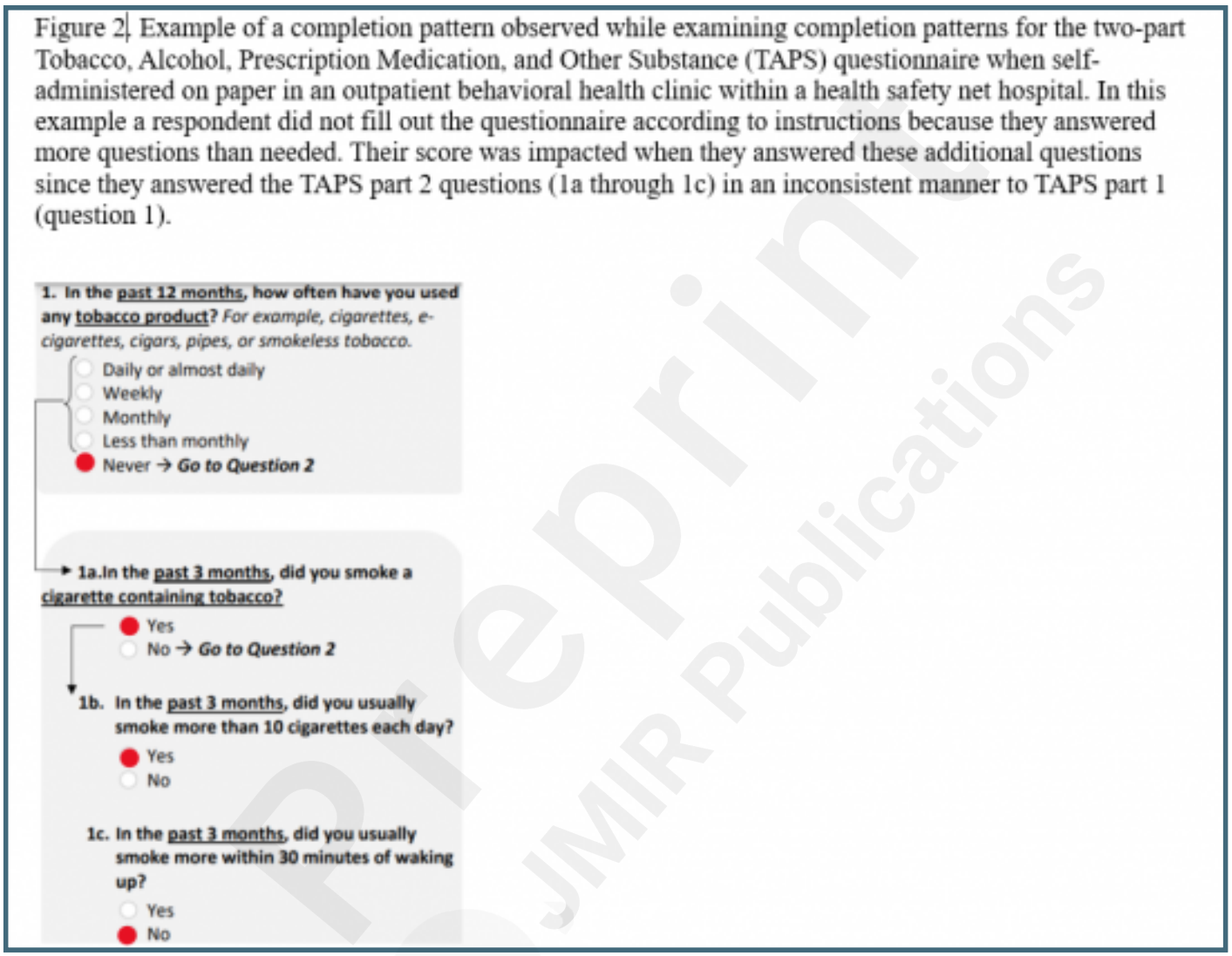
Supplementary Files

Figures

Example of a completion pattern observed while examining completion patterns for the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire when self-administered on paper in an outpatient behavioral health clinic within a health safety net hospital. In this example a respondent did not fill out the questionnaire according to instructions because they answered more questions than needed. However, their score was not impacted since they answered the TAPS part 2 questions (1a through 1c) in a consistent manner to TAPS part 1 (question 1).



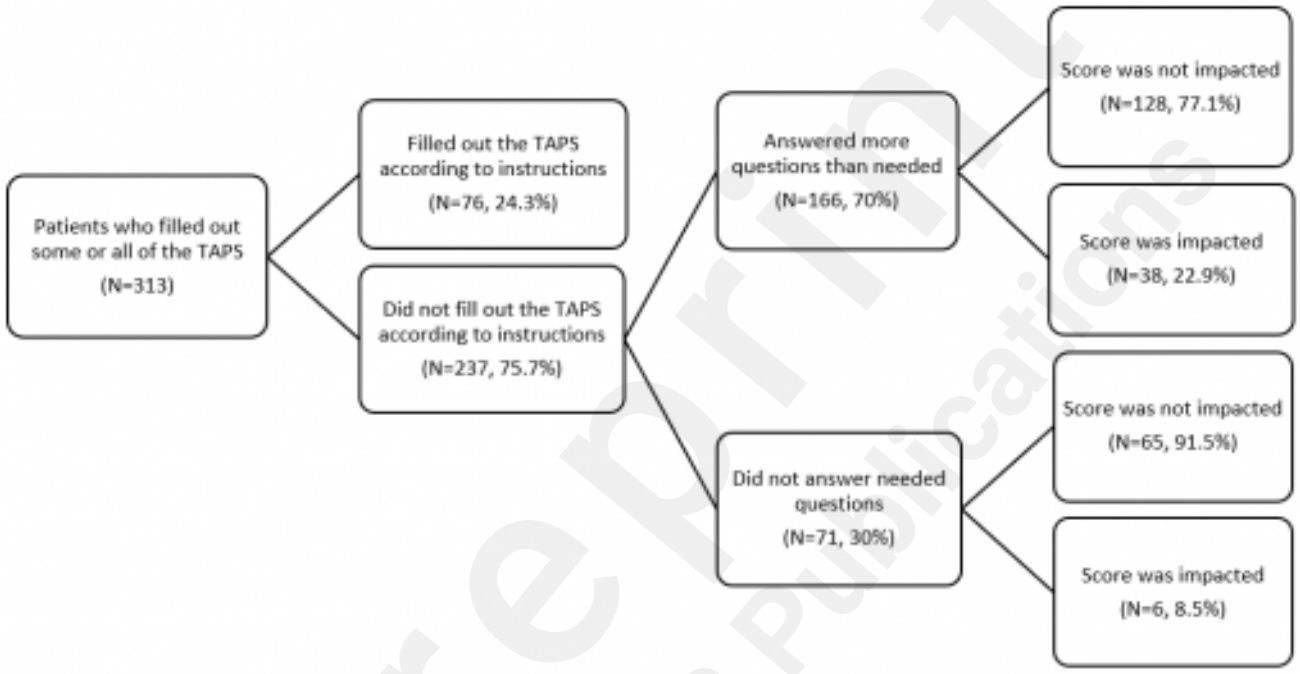
Example of a completion pattern observed while examining completion patterns for the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire when self-administered on paper in an outpatient behavioral health clinic within a health safety net hospital. In this example a respondent did not fill out the questionnaire according to instructions because they answered more questions than needed. Their score was impacted when they answered these additional questions since they answered the TAPS part 2 questions (1a through 1c) in an inconsistent manner to TAPS part 1 (question 1).



Observational data on the completion patterns for the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire when self-administered on paper to patients in an outpatient behavioral health clinic within a health safety net hospital.

Figure 2

Observational data on the completion patterns for the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire when self-administered on paper to patients in an outpatient behavioral health clinic within a health safety net hospital



Multimedia Appendixes

Paper version of the two-part Tobacco, Alcohol, Prescription Medication, and Other Substance (TAPS) questionnaire that was used when observational data was collected on the completion patterns for this questionnaire when self-administered on paper to patients in an outpatient behavioral health clinic within a health safety net hospital.
URL: http://asset.jmir.pub/assets/2d76ebb4884b951a258372fba92ad544.pdf