

Peer Review File

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Reviewer A

1. Have a pilot study been conducted to test the reliability and intra/inter-observer variability?

Response: Thank you for your comments. Software testing was completed as part of a normal app development lifecycle. Beta testing was conducted to test a prototype of the app prior to final release. Testing focused on the end user experience. The objective was to evaluate the perceptions and utility of the app with men who may have Peyronie's disease.

2. What additional information does this App provides that is beyond a visit to GP or doing a quick Google search can achieve?

Response: The app provides a way for individuals to capture and document their measurements at home and to become educated on the signs and symptoms of PD in preparation for a diagnostic visit with a healthcare provider. To our knowledge a confidential non-identifying scan with measurements in the erect state is not otherwise available on the internet.

3. Please elaborate on the limitations:

Response: We have included limitations of the self-assessment:

The measurements in the app's supplementary curvature assessment are dependent on several factors, including the degree of erection rigidity at the time of the scan, adequate lighting, and individual mobile phone camera resolutions.

(Page 9, Line 235)

Reviewer B

Interesting paper on a novel approach for self assessment of PD.

The authors are to be commended.

I have no issues to raise

Response: Thank you for your review.

Reviewer C

This manuscript explores the use of a Peyronie's disease (PD) screening app that can aid in spreading awareness and help diagnose PD in men who are experiencing symptoms such as penile curvature. The strengths of this study include the fact that the app can be deployed on a population level (thus targeting a large number of people), the detailed description of privacy protocols, and the ability to link patients with health care providers (HCPs) directly, thereby reducing the impact of the stigmatization that men with PD experience. The manuscript is overall well-written and clear, and my comments

are minor. These are my suggestions/questions for you:

1. Please mention in the abstract that the tool should be used for the assessment of an ERECT penis only. Thus, men with PD who are reading the results of your study can know that they must use this tool only when they have an erect penis, and it cannot be used to assess PD in a flaccid penis.

Response: We have revised the abstract accordingly.

2. In the introduction, paragraph 3 seems a bit repetitive, as you have already described the impact of PD on men's mental health. You can consider either shortening or removing this.

Response: We have shortened and consolidated this paragraph with the one before. (Page 4, Line 88)

3. Were local providers made aware of how to interpret the results if patients sent it to them? A few more details on how providers received and interpreted the results would add strength to the manuscript, however, I understand that this information is difficult to obtain.

Response: Providers were made aware that the app is a screening tool and not a substitute for diagnosis. Recommendations are to come to the office for an examination. Patients have the option to send information, including scans, to the doctor via email.

4. "To complete the 2D outline capture, the user holds the phone at the angle that shows the greatest curvature" – this may be a slight downside as this is a subjective metric and can vary from patient to patient in their interpretation.

Response: We believe that the angle of greatest curvature should be readily identifiable so the patient can obtain a satisfactory 2D image. For example, if the patient primarily has a dorsal or ventral curvature, the camera would be held to the side by the patient. If it is primarily a lateral curvature, the camera would be held looking downward.

5. Can people also use this app to just find providers related to this health condition without having to perform the scan? It would be nice to give patients this option for those who are not willing to perform the scanning or who have faulty/no camera features.

Response: Yes, an individual can access the SMSNA Healthcare Provider Directory without utilizing optional self-assessment tools available on the app.

6. "The higher risk of depression, anxiety, substance use disorders, self-injurious behaviors, and other psychiatric outcomes in those with PD makes it vital for patients and providers to recognize physical and psychological symptoms early on (5,29)." – while I do agree with this, is it also possibly that the app over-diagnoses this condition resulting in more anxiety? How can that be controlled? Given that this is a pilot study, I would imagine it is hard to comment on this, but it is worth considering this possibility

Response: The app is not meant to be a diagnostic tool, and instead is a source of information for patients likely already believing that they have an abnormality. We believe that the app would actually reassure these patients that their condition is not devastating and there are readily available treatment options.

7. Please describe the mathematical algorithm that the app used to give patients their

results. This need not be in great detail, but at least the broad overview. Additionally, please consider showing a deidentified image of how the results are provided to a patient so that the readers can have an idea of what to expect as the output (if you do choose to include this, please make sure that the image is in line with privacy regulations).

Response: The app developer has retained the rights to the scanning algorithm, making it unavailable for publication at this time.

8. It would be nice to provide future directions on how this/any app/software can be developed and further engage patients with this stigmatized condition, thereby encouraging them to seek treatment

Response: We have added future directions to the conclusions.

“The app features are adaptable and scalable for future releases to further improve patient journeys with PD diagnosis and treatment. For example, the app is now available in Spanish, and future versions of the app are being explored for potential capabilities with a phone’s reverse camera and for more easily following treatment outcomes over time.”

(Page 10, Line 268)