



Use of Sound Waves through Smartphone in monitoring Urinary Flow Patterns amongst residents in Rural Northern Ontario A Digital Health Strategy?

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DECLARATION OF CONFLICT OF INTEREST

- None to declare

INTRODUCTION

- Monitoring of Uroflow patterns of our patients - an important function of the urologist
- Many devices and several techniques in use in health institutions and office practice
- Interest in audio-based Uroflowmetry, make Telemedicine/Virtual Care and Smartphone technologies
- Potential Drivers for self-empowerment, improved access, home-based care and digital health

AIM

- Evaluate the use of a publicly available e-uflow App in a Smartphone in rural Northern Ontario to determine if
- Participants are able to download the App, generate data and send to the Urologist for review and treatment decisions.

STUDY PERIOD

June 15, 2021 to February 18, 2022

*Laurentian University Ethics Review Board
Approval(6020953)*

STANDARD TREATMENT



METHODS AND MATERIALS

- **INCLUSION CRITERIA**

- Adult (men and women) > 18 yr.
- Own a Smartphone
- Has Internet Access
- Standard Toilet at Home
- Referred with a Urological condition

- **EXCLUSION CRITERIA**

- No Smartphone ownership
- Urinary Retention/Indwelling catheter
- Non-consenting

DESIGN



- Prospective

- Qualitative

- Quantitative

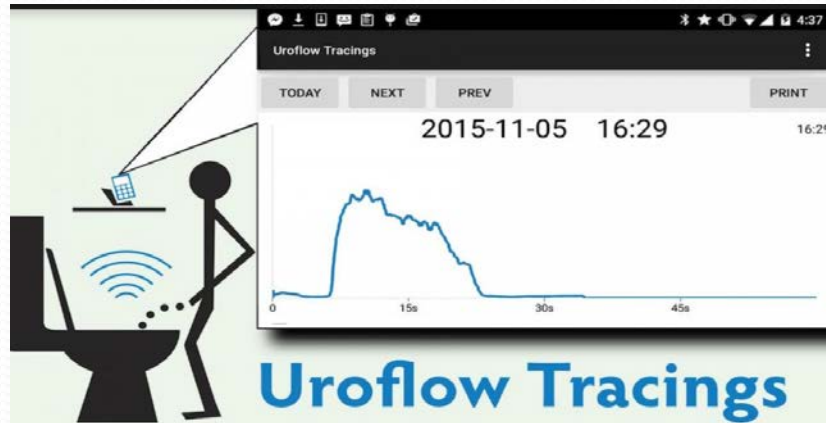
- Descriptive

METHODS AND MATERIALS

- Referral from Primary Care/New and Existing patients
- Triage, scheduled for encounter
Virtual or Face to face
- Encounter with urologist-for Assessment,
Use of e-Uroflow App discussed
- Following Participant(s)' Consent
a unique ID # is generated



With the use of the APP



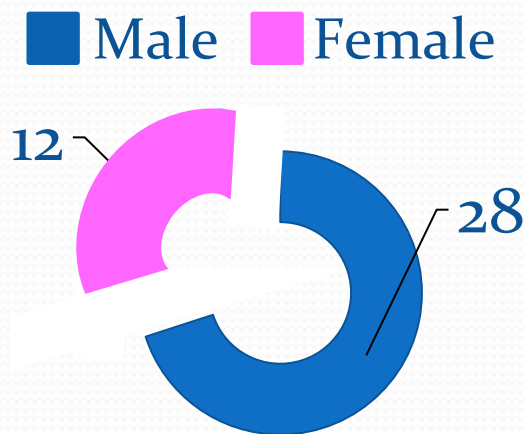
Record all Pees for
4 days and
send in the Data

METHODS AND MATERIALS

- Use the unique ID number to download the App; use it on 4 consecutive days for all urination activities and send data to the Urologist
- Follow up e-Visit (OTN), Virtual/Telephone occur.
- Feedback by online Survey followed
- Participant may withdraw consent



RESULTS



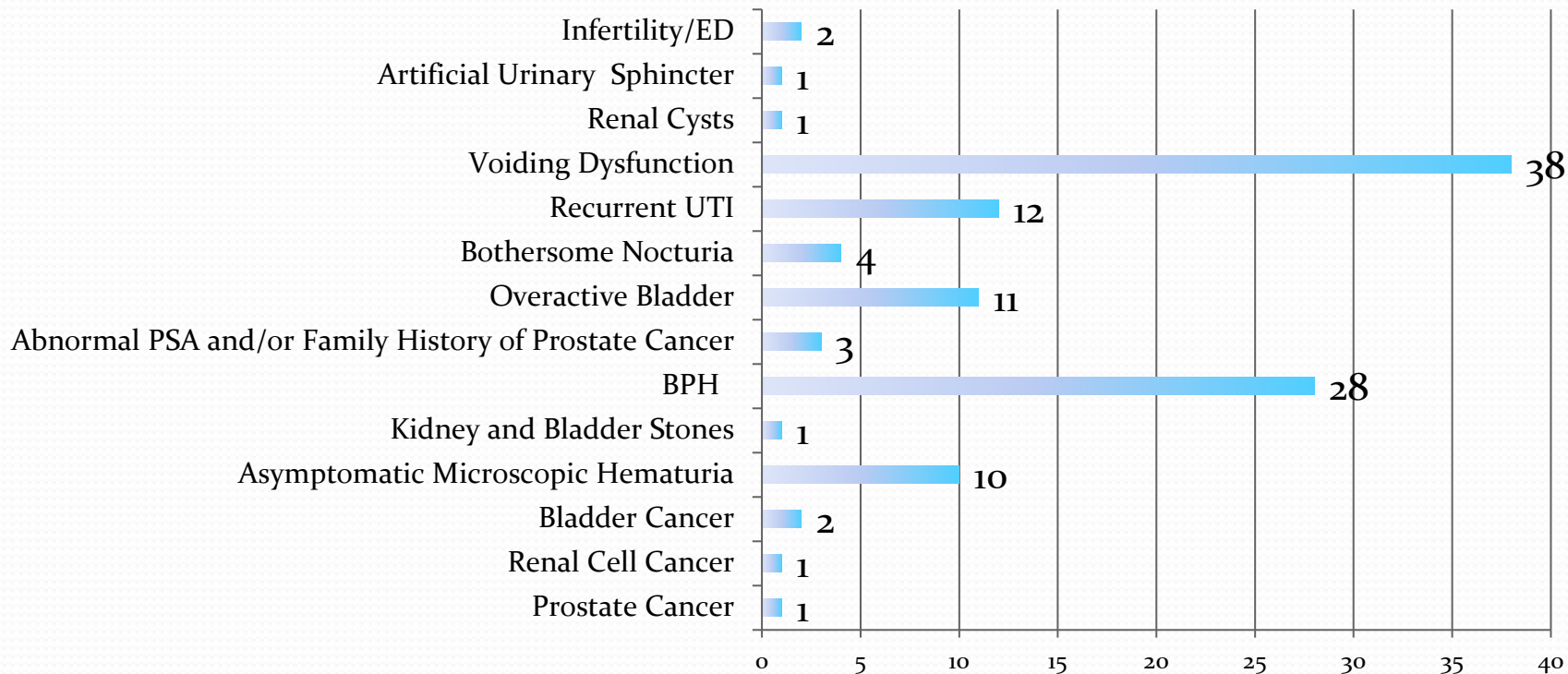
40 Participants

36/40 (90%) completed the trial

Age group

22 to 75
with an average of
64 years old

DIAGNOSES



USAGE OF e-UROFLOW APP

- 36/40 (90%) Used the APP, sent the data by e-mail and had a follow up encounter with the Urologist;
- Some continued to use the APP for several weeks
- Highest user sent 60 data sets; average data sets received 12.9
- All 36/40 found the APP easy to download into their Smartphones

OUTCOME SUMMARY:

BENEFITS

- Participants who completed the trial
 - Found the App easy to use and generate data
 - It was easy, provided convenience, and comfort at 'nature's' call
 - Multiple self-directed, urination data in the home;
 - Appropriate 'physical distancing' and provided useful information for patient care.

OUTCOME SUMMARY:

BENEFITS

- Management in selected cases during the COVID-19 pandemic
- Potential for improved access, cost savings; participants empowerment in self care
- Reduced anxiety associated with in hospital-office-facilities uroflowmetry
- Individualized data generated for specific individual-no generalization

LIMITATIONS

- At present state:
 - Data individualized; conclusions not generalizable
 - Surrounding noise, type of toilet bowl (porcelain, metal) may have influence on the output
 - Distance of smart phone microphone from the toilet bowl or container;

LIMITATIONS

- At present state:
 - Software in present state, not able to generate voided volume, maximum, average flow rates, etc.
 - But this may change
 - No comparative study with the conventional method was done as this study was predominantly during the various waves of the pandemic

CONCLUSION

- Sound waves through the Smartphone App used in individuals appear to be simple and convenient.
- It can generate large amount of e-urination data potential for monitoring, therapeutic and surveillance purposes.
- This provides a possible digital health strategy and calls for multicentre trials and comparative studies.

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THANK YOU
MERCI
NDEWO
MIGWETCHI

TELE-SONO-UROFLOWMETRY

Using **SMARTPHONE APP** to record sound & speed of urination

You are being invited to participate in a research “**STUDY**” to look at the use of a **Smartphone app** made to record the sound and speed of urination in the assessment and care of urinary problems in men and women of different ages in their homes.

Your medical records will be reviewed including the history of your urinary complaints, test results and treatments you have had.



Your participation in this “**STUDY**” is completely voluntary.
You may withdraw from the study at any time, your treatment and care will continue.

Your personal information (name, address, nationality) will be kept private and confidential.
You will be asked for the names of your family physician and any other treating physicians (Urologist, Gynecologist); Physiotherapist, Alternate Medicine Practitioners.
Your treating health care professional will be asked to provide copies of your medical records and tests results related to your complaints.

The study will look at 200 men and women.
All documentation collected will be kept confidential.
Your identity will remain confidential. You will be assigned a unique subject number.
Response to a follow up survey requested is voluntary.
If the results of the Study are published, your identity will also remain confidential.

You will be required to have access to a smart phone with camera and microphone (Android/i-Phone) internet access and standard toilet facilities at home.

If you have any questions or concerns regarding the study, contact the study doctor or study staff at the telephone number and e-mail address listed below.

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