Phase 1 questionnaires

Health Professionals Questionnaire - G1a

This questionnaire below is part of the survey of qualitative and quantitative data for the development of an electronic system that favors the process of prescribing wheelchair users. This is a PhD project in progress of the postgraduate education program in Electrical Engineering at POLI_USP. This research project was approved by the Human Research Ethics Committee of the School of Medicine of the Universidade de São Paulo FMSUP under the consubstantiated opinion of the Ethics Committee in Research for the project (CAEE n ° 53929516.6.0000.0065).

Your participation is important. Below is a brief questionnaire that must be filled out with responses of multiple choices and others in an essay format. All multiple-choice questions can be checked more than once.

* Required

1. Full name *
2. Date of birth:

   Optional
3. Academic Degree: *

   You can select more than 1 option.

   - Physical therapy
   - Occupational therapy
   - Medicine
   - Other:

[Obs.: in Brazil people can get and bachelor's degree in Physical therapy, Occupational Therapy, Medicine]

4. graduation year:
5. Postgraduate education lato sensu (Specialization)

   Write the name (s) of the course (s) and the higher education institution (s)
6. Postgraduate education Stricto sensu (Master / Doctorate / Post doc) Write the name (s) of the course (s) and the institution (s) of higher education.
7. How long have you been prescribing a wheelchair? *
8. How long have you been prescribing a postural support devices (PSD) for a wheelchair? *
9. How did you develop your knowledge in the Seating area (wheelchair and postural adjustment system) Describe as detailed as possible *

Source: https://doi.org/10.11606/T.3.2020.tde-17092020-112047

10. What tools do you usually use for wheelchair prescription? *

- o Uses tape measure
- o Use the wheelchair as a reference
- o Uses goniometer
- o Other:

11. What assessment instrument do you use to prescribe a postural support devices (PSD) for a wheelchair? *

- o Uses semi-finished script
- o Uses body design
- o Use only prescription
- o Other

12. When the patient does not yet have a suitable wheelchair, but needs PSD, what do you do? *

- o Wait for the new wheelchair
- o Prescribes PSD even if you do not have a new wheelchair

13. Where do you perform the patient's clinical assessment for wheelchair prescription? *

- o The patient sitting in a normal chair
- o The patient sitting on a stretcher
- o The patient sitting in his own wheelchair
- o The patient is position dorsal decubitus on a stretcher

14. Where is the patient positioned to assess and prescribe wheelchair PSD? *

- o The patient sitting in a normal chair
- o The patient sitting on a stretcher
- o The patient sitting in his own wheelchair
- o The patient is position dorsal decubitus on a stretcher

15. Do you use imaging exams to assess the pelvis and / or spine when prescribing PSD? *

- o Yes/No
- o If yes, how often?
- o Always, I do not perform the prescription without exams of the patient

Source: https://doi.org/10.11606/T.3.2020.tde-17092020-112047

- Sometimes, I only analyze the images if the patient has many pelvis and spine deformities

16. How do you perform the patient's clinical evaluation for wheelchair prescription? * Describe as detailed as possible

17. How do you perform the clinical evaluation of the patient to prescribe a postural support devices? * Describe as detailed as possible

18. Which nomenclature do you usually use to prescribe an adapted seat? *

Describe as much detail as possible, including examples of the main types of seating you prescribe.

19. How do you define when the seat should be lowered? * Describe as detailed as possible

20. . Which nomenclature do you use to prescribe a customize backrest? *

Describe as much detail as possible, including examples of the main types of backrest that you prescribe.

21. What nomenclature do you usually use to prescribe customize trunk supports? *

Describe as much detail as possible, including examples of the main types of customize trunk supports that you prescribe.

22. Which nomenclature do you use to prescribe customized headrests? *

Describe as much detail as possible, including examples of the main types of headrests you prescribe.

23. Which nomenclature do you use to prescribe the different types of safety belts / systems? *

Describe as much detail as possible, including examples of the main safety belts / systems you prescribe.

24. Which nomenclature do you use to prescribe customize armrests? *

Describe as much detail as possible, including examples of the main types of armrests you prescribe.

25. What nomenclature do you use to prescribe footrests? *

Describe as much detail as possible, including examples of the main types of footrests you prescribe.

26. Which nomenclature do you usually use to prescribe a tables / supports customize for wheelchairs? *

Describe as much detail as possible, including examples of the main types of tables / supports you prescribe.

27. Do you use any technology for PSD evaluation, such as X-sensor ®, or software for a digitized system? *(Edited)Restore original

- Yes*/No

If yes *, describe how you usually do it. Otherwise, it describes the reasons for not using it. *

28. Does the patient usually refer to make the prescribed PSD?

It may be more than one place.

Source: https://doi.org/10.11606/T.3.2020.tde-17092020-112047

29. Do you usually follow the PSD manufacturing process (making and testing) of the patient that you evaluated and prescribed? *

- Yes*/No

If yes *, describe how you usually do it. Otherwise, describe the reasons for not following:

30. Do you usually follow the patient's adaptation process after the delivery of the wheelchair with PSD? *

- Yes*/No

If so *, how does this follow up. Otherwise, what are the reasons for not following up?

31. When the patient presents complaints / complaints in the new postural support devices, how do you usually proceed? *

32. Do you have a direct dialogue with the technician who makes the PSD you prescribed? *

33. When any PSD device that you prescribed was not adequate, what procedure was adopted? *

34. Do you usually prescribe prefabricated PSD (domestic and / or imported)?

- Yes*/No

If so, how do you carry out these prescriptions? Otherwise, what are the reasons for not doing this type of prescription?

35. What are the main difficulties you identify in the PSD evaluation / prescription and manufacturing process? *

36. Do you have any suggestions to favor the communication process between the rehabilitation professional who evaluates and prescribes PSD and the technician / orthopedics settings that manufactures it?

37. Would you like to add something? Any comments?

Technicians Questionnaire - G2

This questionnaire below is part of the survey of qualitative and quantitative data for the development of an electronic system that favors the process of prescribing a postural adequacy system in a wheelchair. This is a PhD project in progress of the postgraduate education program in Electrical Engineering at POLI_USP. Your participation is very important. This research project was approved by the Human Research Ethics Committee of the School of Medicine of the Universidade de São Paulo FMSUP under the consubstantiated opinion of the Ethics Committee in Research for the project (CAEE n ° 53929516.6.0000.0065).

1. Name:
2. Birthday:
3. How was your training to work with the postural support devices?
4. How long have you been working in the field?
5. Places you've worked?
6. How do you receive wheelchair prescriptions for the postural support devices, for example: (via prescription letter, via internet, without prescription)
7. Which prescriptions do you usually receive from a Health professional?
    - Physiatrists
    - Orthopedic doctors
    - Physiotherapists
    - Occupational therapists
    - Family
    - No prescription
    - Other (s)_____
8. Which of the professionals mentioned above do you receive prescriptions most often, and why?
9. What do you find most difficult when reading and interpreting the prescriptions you receive.
10. How do you perform patient measurements?
11. How do you choose the materials to be used? (foam densities, type of plywood ...)
12. Where do you start making PSD (for example, by the seat, backrest.
13. What is your conduct when you do not understand the PSD prescription?
14. What is your conduct when you do not agree with the PSD prescription?
15. Do any other professionals usually accompany the making of PSD?
16. How many tests on average do you perform on each patient until the final delivery of Wheelchair with PSD?
17. Who monitors the patient's adaptation process in the new PSD?
18. What is your conduct when you receive a letter from a professional suggesting the alteration of any wheelchair PSD item(s)?
19. Do you think that prescriptions should be done in some other way? What would the ideal PSD prescription look like?

20. Do you use a digitized seat and back system? Regardless of your answer, what do you think of this type of PSD?

21. Do you use prefabricated postural support devices? Regardless of your answer, what do you think of this type of PSD?

22. Do you in general have difficulty communicating between the professional who prescribes PSD and what the patient wants from the final product? If so, how could this problem be solved?

23. What problems do you think appear most in your daily life and how are they solved?

Wheelchair users with PSD Questionnaire – G3

This questionnaire below is part of the survey of qualitative and quantitative data for the development of an electronic system that favors the process of prescribing a postural adequacy system in a wheelchair. This is a PhD project in progress of the postgraduate education program in Electrical Engineering at POLI_USP. Your participation is important. This research project was approved by the Human Research Ethics Committee of the School of Medicine of the Universidade de São Paulo FMSUP under the consubstantiated opinion of the Ethics Committee in Research for the project (CAEE n ° 53929516.6.0000.0065).

1. Name:
2. Birthday: diagnosis
3. How long have you been a wheelchair user?
4. When did you have your first wheelchair adapted?
5. Do you remember the evaluation process for prescribing adaptations of your wheelchair? If so, can you write soon? Which professionals were involved in this process?
6. How was the assessment made? (stretcher, wheelchair, in a common chair ...)
7. How did you choose the location that made the wheelchair adaptations?
8. Did you experience any pain or discomfort during the adaptation process? How did you solve it? Which professional did you turn to?
9. What did you find most difficult after your adapted wheelchair was ready?
10. Do you think that the professionals involved (OT, PT, physiatrist, and technician) listened to your opinions?
11. Have you been reevaluated after receiving the adapted wheelchair?
12. Do you usually undergo reevaluations with rehabilitation professionals to check your wheelchair adaptations? If so, how often?
13. If there is a problem with the adaptations of your wheelchair (example: broke a part, loosened a screw ... etc) how do you usually solve it? Which professional do you usually turn to?
14. Do you have any suggestions on how your chair adaptations might look? What would you do differently?

Phase 2 Questionnaires

Health Professionals Questionnaire - Tests of prototype v2 and v3

This questionnaire below is part of the survey of qualitative and quantitative data for the development of an electronic system that favors the process of prescribing a wheelchair and a postural adequacy system. This is a PhD project in progress of the postgraduate education program in Electrical Engineering at POLI_USP. This research project was approved by the Human Research Ethics Committee of the School of Medicine of the Universidade de São Paulo FMSUP under the consubstantiated opinion of the Ethics Committee in Research for the project (CAEE n ° 53929516.6.0000.0065).

Your participation is important. Below is a brief questionnaire that must be filled out with responses of multiple choices and others in an essay format.

Thank you so much for accepting to participate in the evaluation of the EasySeating App! Mark a score from 1 to 5 in each statement being:

① Strongly disagree /② Disagree/③ Neutral/④ Agree/ ⑤ Strongly agree

Describe your criticisms and suggestions for improving the prototype's content. Any questions we are available, there is no need to identify yourself.

1. The EasySeating App proposal will be applicable in my clinical practice:

① ② ③ ④ ⑤ - Describe:

2. EasySeating App proposal will have applicability in my clinical practice:

① ② ③ ④ ⑤ - Describe:

3. The information about the wheelchair that must be added by the rehabilitator is sufficient (includes manufacturer, model, measures, and characteristics such as recliner, tilt etc.). Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

4. The seat prescription options have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

5. The backrest prescription options have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

6. The headrest prescription options have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

7. The trunk support prescription options have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

8. The prescription options of upper limbs support have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

9. The footrest prescription options have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

10. The prescription options for safety systems have clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

11. The prescription options tables / supports has clear and sufficient content. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

12. The prescription document generated in PDF contains all sufficient information. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

13. The interaction of the EasySeating app of the end user (patient who receives the wheelchair with a postural adjustment system) with the rehabilitator who prescribed the PSD is useful and is adequate. Please suggest the necessary changes:

① ② ③ ④ ⑤- Describe:

14. If you want, write more suggestions (general aspects) of the EasySeating prototype:

① ② ③ ④ ⑤- Describe:

15. If you want, please, write your time of graduation (o) and how did you acquire experience with prescription of Postural Support Devices?

① ② ③ ④ ⑤- Describe:

Phase 3 Questionnaires

Technology Experts Questionnaire - Tests of prototype v5 and v6

This questionnaire below is part of the survey of quali-quantitative data from the usability test of an App that aims to favor the process of prescribing wheelchair users and the postural adequacy system of rehabilitation professionals. This is a PhD project in progress of the Postgraduate education program in Electrical Engineering at POLI_USP. This research project was approved by the Human Research Ethics Committee of the School of Medicine of the Universidade de São Paulo FMSUP under the consubstantiated opinion of the Ethics Committee in Research for the project (CAEE n ° 53929516.6.0000.0065).

Your participation is important. Below is a brief questionnaire that must be filled out with responses of multiple choices and others in an essay format.

BRIEF EXPLANATION OF THE NIELSEN HEURISTICS ITEMS

1. SIMPLE AND NATURAL DIALOGUE

The interfaces must be simple, since the amount of additional resources overloads the page and may not be necessary at that moment, it must correspond to the user's task in the most natural way possible, to facilitate the relationship between user and computer concepts, the ideal is to show exactly the information that the user needs.

2. SPEAKING USER LANGUAGE

The terminology of the user interface must be geared towards the user and not the system, so the language used must be as natural as possible, avoiding system codes. Care is needed in the use of non-verbal elements, such as icons, to keep them intuitive.

3. MINIMIZE USER MEMORY LOAD

In order to reduce the need for user memorization, the system must display dialog elements to allow them to choose from them, as well as interface elements that make it possible to choose actions.

4. CONSISTENCY

The system must guarantee the integrity of its functions, which should have the same effect when performed, in addition to presenting information in accordance with an established standard, thus facilitating recognition.

5. FEEDBACK

The system should maintain a continuous dialogue with the user, about what the user is doing and inserting into it, especially before definitive actions such as subscribing files or deleting data.

6. OBVIOUS OUTPUTS

The system must always provide a way of exiting a given action to the user, with that the user's safety in exploring the system will increase, facilitating the learning in an exploratory way.

7. SHORTCUTS

Shortcuts should be provided for frequently used actions, such as abbreviations, function keys or key commands, dialog boxes with keys to access important functions.

8. ERROR MESSAGES

The error messages must be clear and precise, so that the user easily understands what happened, helping him to solve the problem if possible.

9. ERROR PREVENTION

. Error-prone situations should be foreseen, such as requests for data that could be selected by the user and avoided.

10. DOCUMENTATION AND HELP

It is preferable that a system is simple enough to allow its use without the need for any kind of help or documentation, but this objective cannot normally be achieved, so it must have a quality text and well-structured information.

PERFORMING HEURISTIC EVALUATION

Access EASYSEATING in an exploratory way, verifying its various functionalities, and based on the heuristic rules presented, perform the environmental assessment. Assign values to the problems found according to the severity level table.

Severity level	Type	Description
0	Not important	It is not an impacting usability problem.
1	Cosmetic	Just a cosmetic problem without much impact.
2	Simple	Small usability problem, can be fixed.
3	Severe	Big usability problem, it must be fixed.
4	Catastrophic	Catastrophic usability problem, urgent correction needed.

Answer the questionnaire according to the problems found, describing the fault and the location where it was found, try to describe as detailed as possible.

1. SIMPLE AND NATURAL DIALOGUE – Does the App display what is necessary for the user? Is excess information presented?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

2. SPEAKING USER LANGUAGE – Does the App use a language familiar to the user?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

3. MINIMIZE USER MEMORY LOAD – Does the App need to remember information between system features?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

4. CONSISTENCY – Do the actions have the same results in different situations?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

5. FEEDBACK - Are users informed of the status of requests in a timely manner?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

6. OBVIOUS OUTPUTS – Does the App allow users a means to cancel actions that are no longer desired?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

7. SHORTCUTS –Does the App offer ways to perform actions optimally?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

8. ERROR MESSAGES–Does the App offer clear and easy to understand error messages?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

9. ERROR PREVENTION –Does the App have design flaws, errors that could be easily avoided?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

10. DOCUMENTATION AND HELP– Does the App offer clear, accurate and easily located information for help?

Describe the problem:

Assigned degree:

() 0 - Not important () 1- Cosmetic () 2 - Simple () 3 - Severe () 4 - Catastrophic

EVALUATOR DATA

Name (optional):

_____

Please answer the questions below:

1. Satisfaction level observed when using EasySeating:

() Very satisfied () Satisfied () Indifferent () Little satisfied () Dissatisfied

2. Difficulty level encountered when using EasySeating:

() Very easy () Easy () Indifferent () Little difficult () Difficult

I declare that I am aware that my data in this questionnaire will be used for purposes of assessing the usability of EasySeating.

Participant's signature:

_____

Source: https://doi.org/10.11606/T.3.2020.tde-17092020-112047