Supplementary Material

Title:

Qualitative exploration and patient global impression of disease severity in the early stages of Parkinson's disease

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Appendix A. Concept Elicitation (CE) Interview Questions

1. Tell me about your PD. What kind of symptoms do (did) you experience?

i *For each sign/symptom mentioned ask:*

a. How often do you experience that?
b. Does <symptom> vary or stay the same throughout the day/week?
c. How bad does that get? If you were to rate it from 0 to 10.
d. How did it make you feel?
  - Probe: Physically? (eg, light headiness from standing)
  - Probe: Emotionally? (eg, depressed, anxious mood, apathy)
  - Probe: Cognitively? (eg, cognitive slowing, impaired reasoning, memory loss, deficits in attention and orientation)

e. Is there something you are unable to do because of any of the symptoms?
  - Probe: Daily activities? (eg, dressing, handwriting, eating tasks, chewing and swallowing, hygiene, speech problems)
  - Probe: Work? (eg, handwriting, sleep disturbances, cognitive impairment)
  - Probe: Lack of motivation? (eg, doing hobbies and other activities)
  - Probe: Social activities? (eg, doing hobbies and other activities)
  - Probe: Relationships?
  - Probe: Physical activity?
  - Probe: Sleep disturbance? (eg, trouble going to sleep at night or staying asleep through the night, trouble staying awake during the daytime)
  - Probe: Trouble starting or finishing tasks?

2. Now that we've discussed your <PD> symptoms, what would you say is the most bothersome symptom you experience?

a. Why is that the most bothersome symptom for you?
b. Which is more bothersome to you, frequency or severity or knowing when the symptom is going to occur?
  - Probe: Why is (frequency or severity or knowing when the symptom is going to occur) more bothersome?
  - Probe: Has that always been the most bothersome symptom, or has it changed overtime?

3. Based on our discussion related to things you are unable to do because of the symptoms you are experiencing, in what way has <PD> impacted (affected) you the most?

a. Why has <PD> impacted (affected) you the most in this way?

Appendix B. Cognitive Debriefing (CD) Interview Questions

4. Please read the question and response options out loud and choose the response option that best answers the question for you, it's called Patient Global Impression of Severity.

Over the past week, how would you describe the severity of your Parkinson's Disease?

☐ No problems
☐ Very mild
☐ Mild
☐ Moderate
☐ Severe
☐ Very severe

5. Now I want you to think about the symptoms you are currently experiencing or may experience at each level of severity on the rating scale. Let's start with the response you provided to the PGIS question, [Participant's PGIS answer].

a. Why did you give this response?
b. What are your symptoms like for [Participant's PGIS answer] <PD> severity?

6. Now let's talk about the other response options, what do you think your symptoms would be like for <No problems, Very Mild, Mild, Moderate, Severe, Very Severe> <PD> severity?

i For each sign/symptom mentioned probe on impacts:

a. How often do you think you would experience that <symptom>?
b. Would <symptom> vary or stay the same throughout the day/week?
c. How do you think it would make you feel?
  - Probe: Physically? (eg, light headiness from standing)
  - Probe: Emotionally? (eg, depressed, anxious mood, apathy)
  - Probe: Cognitively? (eg, cognitive slowing, impaired reasoning, memory loss, deficits in attention and orientation)

d. What would be the impact(s) you think you may experience because of these symptoms at this level of severity?
  - Probe: Daily activities? (eg, dressing, handwriting, eating tasks, chewing and swallowing, hygiene, speech problems)
  - Probe: Work? (eg, handwriting, sleep disturbances, cognitive impairment)
  - Probe: Lack of motivation? (eg, doing hobbies and other activities)
  - Probe: Social activities? (eg, doing hobbies and other activities)
  - Probe: Relationships?
  - Probe: Physical activity?
  - Probe: Sleep disturbance? (eg, trouble going to sleep at night or staying asleep through the night, trouble staying awake during the daytime)
  - Probe: Trouble starting or finishing tasks?

7. Now based on the <PD> symptoms and impacts we discussed above for each response option, would a worsening or improvement by one category e.g., from [Participant's PGIS answer] to [1 category up] be meaningful or [Participant's PGIS answer] to [1 category down]?

a. Why would this be meaningful to you?
b. Why would this not be meaningful to you? What would be a meaningful change on the scale?

Table 1. Participant Demographics

Demographic Characteristic	Total Sample (N=17)
Sex	
n	17
Male	11 (64.7%)
Female	6 (35.3%)
missing	0
Age	
n	17
Mean (SD)	61.6 (11.67)
Median	65.0
Q1, Q3	49.0,70.0
Min/max	41,80
missing	0
Race	
n	17
White	14 (82.4%)
Black/African American	2 (11.8%)
American Indian/Alaska Native	0
Asian/Asian American	0
Native Hawaiian/Pacific Islander	0
Other	1 (5.9%)
Prefer not to answer	0
missing	0
Ethnicity	
n	17
Hispanic/Latino	2 (11.8%)
Not Hispanic/Latino	15 (88.2%)
Prefer not to answer	0
missing	0
Highest level of education	
n	17
Some high school	0
High school diploma or general education diploma (GED)	3 (17.6%)
Some college or certification program	1 (5.9%)
College, technical college, or university degree (2 or 4 year)	9 (52.9%)
Graduate degree (MS, PhD, MD, etc.)	4 (23.5%)
Other	0
missing	0
Current work status	
n	17
Employed full-time (≥ 40 hours per week)	8 (47.1%)
Employed part-time (< 40 hours per week)	1 (5.9%)
Homemaker	1 (5.9%)
Disabled	2 (11.8%)
Student	0
Retired	7 (41.2%)
Unemployed	0
missing	0
Family History	
n	17
Yes	4 (23.5%)
No	13 (76.5%)
missing	0

SD = standard deviation

Table 2. Participant Clinical Characteristics

Clinical Characteristic	Total Sample (N=17)
Years since diagnosis of (clinician-reported) PD	
n	17
Mean (SD)	2.37 (1.662)
Median	1.98
Q1, Q3	0.88,3.34
Min, Max	0.0,5.8
Missing	0
Disease Stage (Modified Hoehn & Yahr Scale)	
n	17
Stage 0	0
Stage 1	7 (41.2%)
Stage 1.5	6 (35.3%)
Stage 2	3 (17.6%)
Stage 2.5	1 (5.9%)
Stage 4	0
Stage 5	0
Missing	0
Currently receiving treatment	
n	17
Yes	13 (76.5%)
No	4 (23.5%)
Missing	0
Drug name	
Levodopa	
n	13
Current	13 (100.0%)
Previous	0
Never	0
Missing	0
Other anti-PD[a]	
n	3
Current	1 (33.3%)
Previous	0
Never	2 (66.7%)
Missing	10
Disabled	2 (11.8%)
Student	0
Retired	7 (41.2%)
Unemployed	0
missing	0
Family History	
n	17
Yes	4 (23.5%)
No	13 (76.5%)
missing	0

SD = Standard Deviation
[a] *Rasagiline* is the other collected anti-PD medication participants reported.

Table 3. Participant-Reported Motor Symptoms

Symptom	N=17	Quote
Tremor	16 (94%)	"I just started noticing it more and more that it was just not happening in my other hand. It was just like only one hand, um, that was just having a tick. And since I was using like pens in the office, I like just was having a hard time like gripping them and just it ju- It just felt weird" (40-005).
Rigidity	15 (88%)	"Oh, I would say definitely the stiffness. I can feel that at times. I really don't feel the rigidity, although my current movement disorder specialist says I have some rigidity, mild, but she says I have it" (03-008).
Postural instability	13 (76%)	"Sometimes I have a little balance, if I get up quickly from a seated position sometimes, or if I'm exercising and I get up, if I'm doing bent stretches and stuff like that and I get up too quickly, I get little off balance, but not bad" (03-004).
Bradykinesia	11 (65%)	"Sometimes I do, like zipping up a jacket or something like that. It takes me a while to actually get the zipper together so that I can zip it up, and that feels like slow. Sometimes cooking meals and stuff like that, chopping vegetables and things like that. I feel kind of slow, kind of sluggish. I'm used to doing things quickly, and don't like that slowness that I sometimes feel. I'll play the piano and try and work on that on a regular basis. And sometimes fast music is kind of hard for me to be on top of, if that makes sense" (03-009).

Table 4. Non-Motor Symptom Frequency Table

Symptom	N=17	
Urinary problems	11 (65%)	"And I also was having a lot of, um... Which I didn't know it was related to it, but urinary, um, urinary tract problems. I keep getting urinary tract infections […] Um, actually I just got over one. It can be pretty bad, you know, because that's so uncomfortable, that can be, like, a 10" (40-006).
Olfactory problems	9 (53%)	"Loss of smell. It was one of those that I noticed more after I started taking the medication. If you don't smell something, it's hard to know that you missed anything because you don't know that an odor is there. But I didn't lose it as much as it

		just kind of changed. Then it came back after I'd been on the levodopa for a few months" (03-005).
Gastrointestinal issues	8 (47%)	"It's not good now, but I've had to go out to my mother-in-law […] eating over there you just eat terribly and that didn't help. I take MiraLax and I've been pretty good, right now I haven't gone much in three or four days, so hopefully something will happen soon. But in severity it's not that bad. Usually it's pretty good and […] the MiraLax will kick in and I have gone a little in those four days so it's not mass panic usually" (03-010).

Table 5. Participant-Reported Impacts

Impacts	**N=17**	**Quote**
ADL[a] or "Other" impacts	17 (100%)	"I'm kind of in survival mode now. I know how to do my job now. I can't imagine the stress of taking over a new position. So, in terms of elevating or anything like that, I'm not interested in it because the stress increases the manifestations of the symptoms. So, I'm not looking for anything that's any more stressful than what I already have. So, like I said, I'm just trying to survive […] I don't take as many presentations as I used to. I don't ever plan anything where I have to write on the whiteboard because sometimes, depending on how stiff my shoulder is, it doesn't respond very well (03-005).
Emotional impacts	16 (94%)	"Um, yeah, it, e- emotionally I think most- mostly because, um, consider myself a little young still, but I've always thought that, you know, this condition was for older people, um, you know, never really, again, um, thought about it until- until I was, uh, diagnosed. But, um, yeah, it's made me feel, you know, a little, uh, worried and depressed maybe in a way" (90-001).
Physical impacts	15 (88%)	"I don't walk great distances without stopping. If we're going downtown to enjoy the shops or something, I have to stop every so often and just catch myself and then I'm fine" (01-005).
Social impacts	13 (76%)	"So, it's changed the relationship somewhat in our marriage. My wife is a wonderful caregiver, and I don't worry about her not managing this, but she's had to deal with it. Sometimes, when I have a day where I'm hurting or I don't feel good, or sometimes that's all I have to talk about, and she's got other problems. So, that puts a lot of burden on her. I'm blessed to have her. But I feel that there's a big burden on her that has impacted our marriage. Sometimes, I think I'm a patient more than I am a husband" (03-005).

Cognitive impacts	8 (47%)	“Um, cognitively it’s not... you know, as I mentioned before, not... it’s pretty mild in term of cognitive stuff, but it can get worse when it gets to be severe. Um, where I do have some cognitive issues, flaring up that’s, it becomes bothersome in terms of really troubling me in doing daily activities, you know, kind of restlessness, um, fogginess, forgetting things, um, skipping steps, that kind of thing. It’s very rare for me” (40-003).

ADL = activities of daily living

Table 6. Current PGI-S Severity

	No Problems	Very Mild	Mild	Moderate	Severe	Very Severe
PGI-S Severity	**(n=0; 0%)**	**(n=2; 12%)**	**(n=8; 47%)**	**(n=6; 35%)**	**(n=1; 6%)**	**(n=0; 0%)**

Table 7. Summary PGI-S Descriptions

PGI-S Rating	**Participant Symptom Descriptions for PGI-S Response Options**	**Participant Impact Descriptions for PGI-S Response Options**
No Problem+	No shaking/tremors; walk with ease; no shuffling	Doing great, no impacts
Very Mild+	Barely noticeable symptoms, limited tremors (1x week), less stiff	Able to do day-to-day functions, happier and more energetic, not a very big impact on life
Mild+*	Similar to very mild, limited tremors, little pain, and leg cramps	Irritating but not a very big impact on life, some sleep issues
Moderate+*	Symptoms become more visible: tremors frequency and severity increases, more tightness and pain, walking becomes more impaired	Starting to need more assistance with daily tasks, more anxiety, increase in fatigue and sleep issues, more isolated, less motivated to leave house
Severe*	Starting to experience more constant symptoms: Less ability to walk	Decrease in day-day function, walking aid and need caregiver, increase in depression and

	mobility decreasing, severe tremors on both sides, balance affected	anxiety no longer able to work and drive
Very Severe*	Constant tremors on both sides, unable to stand and walk, limited or no mobility, constant pain	Completely impacted – full time care and wheelchair bound, cognitive decline, comatose, thoughts of death

+ indicates past or present PGI-S rating description.

* indicates hypothetical PGI-S rating description.