

# SUPPLEMENTARY MATERIAL

## QUESTIONNAIRE FOR THE GENERAL POPULATION

*The red colour indicates which study groups the questions will be asked to*  
*The purple colour indicates the survey pathways depending on participants' answers*

### Study Questionnaire for general population (Groups A1, A2, A3 and A4)

|  | Self-report constipation | Do not self-report constipation |
|--|--------------------------|---------------------------------|
| Fulfil Rome III criteria for constipation        | Group A <sub>1</sub>     | Group A <sub>3</sub>            |
| Do not fulfil Rome III criteria for constipation | Group A <sub>2</sub>     | Group A <sub>4</sub>            |

### Inclusion criteria

**First, we will ask you several questions to see if you are eligible to take part in this questionnaire survey.** *(for all groups A)*

|   |  |
|---|--|
| <b>Age (years)</b>  | _____ years <i>(free text, if &lt;18 y, exited)</i>  |
| <b>Are you a medical doctor, nurse or an allied health professional?</b>                | <input type="checkbox"/> No, I am not a doctor or an allied health professional <i>(directed to the patients questionnaire)</i><br><input type="checkbox"/> Yes, I am a medical doctor (I am a General Practitioner) <i>(directed to the doctors questionnaire)</i><br><input type="checkbox"/> Yes, I am a medical doctor (I am a gastroenterologist) <i>(directed to the doctors questionnaire)</i><br><input type="checkbox"/> Yes, I am a medical doctor (I am a colorectal surgeon) <i>(directed to the doctors questionnaire)</i><br><input type="checkbox"/> Yes, I am a medical doctor, but I am not a gastroenterologist, colorectal surgeon or GP <i>(exited)</i><br><input type="checkbox"/> Yes, I am a nurse or midwife <i>(exited)</i><br><input type="checkbox"/> Yes, I am an allied health professional <i>(exited)</i> |
| <b>Are you currently pregnant or breast-feeding?</b>                                    | <input type="checkbox"/> YES <i>(exited)</i><br><input type="checkbox"/> NO<br><input type="checkbox"/> Not applicable: I am a male  |
| <b>Please indicate if you currently have any of the following disorders of the gut:</b> | <input type="checkbox"/> Crohn's disease <i>(exited)</i><br><input type="checkbox"/> Ulcerative colitis <i>(exited)</i><br><input type="checkbox"/> Coeliac disease <i>(exited)</i><br><input type="checkbox"/> Cancer of the gut (e.g. throat, gullet, stomach, bowel) <i>(exited)</i><br><input type="checkbox"/> Any history of major bowel surgery (except for having your appendix or gallbladder removed) <i>(exited)</i><br><input type="checkbox"/> Chronic diarrhoea (e.g. IBS with diarrhoea) <i>(exited)</i><br><input type="checkbox"/> I do not currently have any of the above disorders of the gut  |
| <b>Do you currently live in United Kingdom?</b>   | <input type="checkbox"/> YES<br><input type="checkbox"/> NO <i>(exited)</i>  |

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Personal information on constipation and its symptoms & perceptions

We will now ask you general questions regarding your bowel movements. Although this is personal information, please answer as honestly as you can. This information will not be shared with anybody (it is confidential) and it cannot be linked to you personally (it is anonymous). *(for all groups A)*

|   |  |
|---|--|
| Do you consider yourself to have constipation?                                | <input type="checkbox"/> YES<br><input type="checkbox"/> NO  |
| <i>(if said yes to previous question)</i> How long have you had constipation? | <input type="checkbox"/> Less than 12 months<br><input type="checkbox"/> 1 to 4 years<br><input type="checkbox"/> 5 to 9 years<br><input type="checkbox"/> 10 to 19 years<br><input type="checkbox"/> 20 years or more (or lifelong) |
| Have you ever received a formal diagnosis of constipation by a doctor?        | <input type="checkbox"/> YES<br><input type="checkbox"/> NO  |

Please indicate whether you have ever visited any of the professionals listed specifically for their help in managing YOUR symptoms of constipation. You can choose more than one. *(only for groups A1 and A2)*

- ☐ No, I have never visited a health professional for help in managing my constipation
- ☐ Yes, General Practitioner (GP)
- ☐ Yes, Hospital doctor (e.g. gastroenterologist, colorectal surgeon)
- ☐ Yes, Nurse
- ☐ Yes, Dietitian
- ☐ Yes, Pharmacist
- ☐ Yes, Complementary or alternative practitioner

*(if they replied “no” to question above)*. You indicated that you have never visited a healthcare professional to manage your symptoms of constipation. We are interested to find out why you have never visited one. Please indicate the reasons why you have not visited a health professional for help in managing your constipation.

- ☐ My symptoms of constipation are not that bad to seek professional help
  - ☐ I feel a health professional will not understand or care for my problems with constipation
  - ☐ I manage my symptoms of constipation successfully on my own
  - ☐ I am too embarrassed to talk about my symptoms of constipation to a health professional
  - ☐ Other: \_\_\_\_\_
-

**We will now ask you questions regarding the symptoms you think are important for somebody to be considered to have constipation. Please take time to think about each question before answering. (for all groups A)**

**Below is a list of symptoms.**

**Please indicate a maximum of 5 symptoms you think are the most important for somebody to be considered as having constipation. These symptoms do not have to be the ones you suffer from; only indicate the symptoms you think are important for somebody to be considered to have constipation. You do not need to indicate 5 symptoms, if you think there are less. (this will allow a maximum 5 ticks)**

- ☐ Abdominal discomfort
- ☐ Abdominal pain
- ☐ Abdominal crampings
- ☐ Abdominal bloating
- ☐ Rectal bleeding with or after a bowel movement
- ☐ Rectal bleeding not associated with a bowel movement
- ☐ Pain during a bowel movement
- ☐ Rectal pain or burning after a bowel movement
- ☐ Needing to use laxative medicines to help your bowel movements
- ☐ Irregular bowel movements
- ☐ Infrequent bowel movements
- ☐ Frequent trips to the toilet without being able to pass a stool
- ☐ Frequent trips to the toilet and able to pass a stool each time
- ☐ Sense that you have not completely emptied your bowel after attempting a bowel movement
- ☐ Needing to use your fingers to help pass a stool
- ☐ Small quantity of stool being passed
- ☐ Straining a lot when passing a stool
- ☐ Hard or lumpy stools
- ☐ No sense of the urge to pass a stool
- ☐ Spending a long time on the toilet to achieve a bowel movement
- ☐ Spending a long time on the toilet without being able to pass a stool
- ☐ Wind / flatulence
- ☐ Noisy or smelly wind / flatulence
- ☐ Backache
- ☐ Headaches and/or dizziness
- ☐ Reflux and/or nausea
- ☐ Uncontrolled leakage of stool after passing a stool
- ☐ Wearing of pads/panty liners to protect against leakage
- ☐ Stool gets stuck half way out
- ☐ No sensation of having had a bowel movement
- ☐ Sleep interrupted by abdominal discomfort
- ☐ Skin rash on abdomen
- ☐ Blurred vision

**We will now ask you questions regarding the symptoms of constipation that YOU experience. (only for groups A1 and A2)**

**Of the symptoms listed below, indicate all the symptoms you experience in general. You can choose as many answers as you want. (they can choose as many answers as they want)**

- ☐ Abdominal discomfort
- ☐ Abdominal pain
- ☐ Abdominal crampings
- ☐ Abdominal bloating
- ☐ Rectal bleeding with or after a bowel movement
- ☐ Rectal bleeding not associated with a bowel movement
- ☐ Pain during a bowel movement
- ☐ Rectal pain or burning after a bowel movement
- ☐ Needing to use laxative medicines to help your bowel movements
- ☐ Irregular bowel movements
- ☐ Infrequent bowel movements
- ☐ Frequent trips to the toilet without being able to pass a stool
- ☐ Frequent trips to the toilet and able to pass a stool each time
- ☐ Sense that you have not completely emptied your bowel after attempting a bowel movement
- ☐ Needing to use your fingers to help pass a stool
- ☐ Small quantity of stool being passed
- ☐ Straining a lot when passing a stool
- ☐ Hard or lumpy stools
- ☐ No sense of the urge to pass a stool
- ☐ Spending a long time on the toilet to achieve a bowel movement
- ☐ Spending a long time on the toilet without being able to pass a stool
- ☐ Wind / flatulence
- ☐ Noisy or smelly wind / flatulence
- ☐ Backache
- ☐ Headaches and/or dizziness
- ☐ Reflux and/or nausea
- ☐ Uncontrolled leakage of stool after passing a stool
- ☐ Wearing of pads/panty liners to protect against leakage
- ☐ Stool gets stuck half way out
- ☐ No sensation of having had a bowel movement
- ☐ Sleep interrupted by abdominal discomfort
- ☐ Skin rash on abdomen
- ☐ Blurred vision

**On the list shown below, you can see the symptoms of constipation that you said you experience in general. Please rate these symptoms with regards to how bothersome each of these is to you. (only for groups A1 and A2)**

|            | Not at all bothersome | Mildly bothersome     | Moderately bothersome | Severely bothersome   |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Choice A   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Choice B   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Choice C   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Choice D   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Choice ... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| .....      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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## Case studies

We will now present you with 10 different case scenarios describing the bowel habits and symptoms of 10 people. These people rarely have loose stools and do not suffer from irritable bowel syndrome or any other gut disorder.

Based on the descriptions given and the symptoms alone, please indicate whether you think each of these people has constipation or not. Please take time to read each scenario. *(Each case study will appear in different pages)*

**Adult A has the following bowel habits/symptoms:**

- They open their bowels 2 times per week
- The usual stool consistency is as follows:



Like a sausage or snake, smooth and soft

- They do not have abdominal distension or bloating
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Adult B has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



Separate hard lumps, like nuts

- They do not have abdominal distension or bloating
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Adult C has the following bowel habits/symptoms:**

- They open their bowels 2 times per week
- The usual stool consistency is as follows:



Separate hard lumps, like nuts

- They do not have abdominal distension or bloating
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool
- 

**Do you think this person has constipation?**

- ☐ YES  
☐ NO

**Adult D has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



Like a sausage or snake, smooth and soft

- They have abdominal distention (i.e. bloating)
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES  
☐ NO

**Adult E has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



Soft blobs with clear-cut edges

- They do not have abdominal distension or bloating
- They feel they have not completely emptied their bowels after passing a stool
- They need to strain a lot to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES  
☐ NO

**Adult F has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



Like a sausage or snake, smooth and soft

- They do not have abdominal distension or bloating
- They feel they have not completely emptied their bowels after passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool

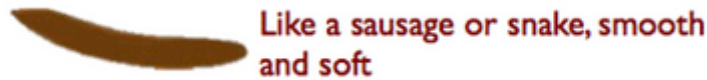
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Adult G has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



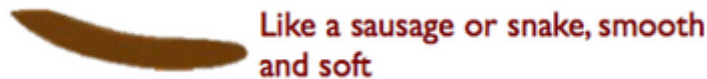
- They do not have abdominal distension or bloating
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Adult H has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



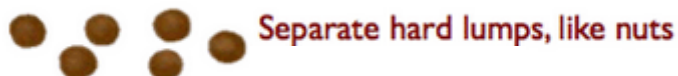
- They do not have abdominal distension or bloating
- They feel they have completely emptied their bowel after a passing a stool
- They need to strain a lot to pass a stool
- They do not sense anything blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool

**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Adult I has the following bowel habits/symptoms:**

- They open their bowels 2 times per week
- The usual stool consistency is as follows:



- They have abdominal distention (i.e. bloating)
- They feel they have not completely emptied their bowels after passing a stool
- They need to strain a lot to pass a stool
- They sense that something is blocking their bowels from passing a stool
- They need to use their fingers to help pass a stool

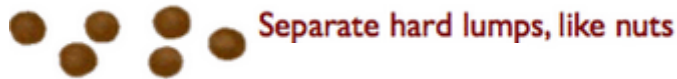
**Do you think this person has constipation?**

- ☐ YES

☐ NO

**Adult K has the following bowel habits/symptoms:**

- They open their bowels 1 time every day
- The usual stool consistency is as follows:



- They have abdominal distention (i.e. bloating)
- They feel they have completely emptied their bowel after a passing a stool
- They do not need to strain to pass a stool
- They sense that something is blocking their bowels from passing a stool
- They do not need to use their fingers to help pass a stool








**Do you think this person has constipation?**

- ☐ YES
- ☐ NO

**Personal bowel habits - (for all groups A)**





**We will now ask you more specific questions regarding your symptoms of constipation. Although this is personal information, please answer as honestly as you can. This information will not be shared with anybody (it is confidential) and it cannot be linked to you personally (it is anonymous).**

**Please read each question carefully and indicate if they are true or false with regards to your experiences.**

| On an average week, how many times do you open your bowels?  | _____ per week (enter a number)<br>(free text)  |
|--|---|
| <p><b>Indicate the USUAL consistency of your stools using the options shown below.</b></p> <p><b>Please, only tick one answer:</b></p> <p><i>(only allow 1 tick)</i></p> | <div><p>Separate hard lumps, like nuts<br/>(hard to pass)</p></div> <div><p>Sausage-shaped but lumpy</p></div> <div><p>Like a sausage but with cracks on its surface</p></div> <div><p>Like a sausage or snake, smooth and soft</p></div> <div><p>Soft blobs with clear-cut edges<br/>(passed easily)</p></div> <div><p>Fluffy pieces with ragged edges, a mushy stool</p></div> <div><p>Watery, no solid pieces.<br/><b>Entirely Liquid</b></p></div> |



Over the last 3 months, please indicate if you agree with the statements below:

|  |   |
|--|---|
| For at least 25% (one-quarter) of bowel movements I pass, I need to strain a lot   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| For at least 25% (one-quarter) of bowel movements I pass, the stool consistency is as follows<br><div style="border: 1px solid red; padding: 5px; margin: 5px 0;">  Separate hard lumps, like nuts </div> <div style="border: 1px solid red; padding: 5px; margin: 5px 0;">  Sausage-shaped but lumpy </div> | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| For at least 25% (one-quarter) of bowel movements I pass, I have a sense that I have not completely emptied my bowel afterwards  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| For at least 25% (one-quarter) of bowel movements I pass, I have a sense that something is blocking my bowels from passing a stool   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| For at least 25% (one-quarter) of bowel movements I pass, I need to use my fingers to help pass a stool  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| I open my bowels less than 3 times per week  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |
| I rarely have loose stools as shown below unless I am using laxatives:<br><div style="border: 1px solid gray; padding: 10px; margin: 5px 0;">  Fluffy pieces with ragged edges, a mushy stool<br/>  Watery, no solid pieces. Entirely Liquid </div>   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |

|  |   |
|--|---|
| During the last 3 months, I have suffered with regular abdominal pain or discomfort for at least 3 days per month  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No <i>(move to next section)</i> |
| Does this abdominal pain / discomfort <u>improve after opening your bowels?</u>  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                               |
| Is the start of the pain / discomfort usually associated with a change in <u>the number of times that you open your bowels</u> (less or more visits to the lavatory than usual)? | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                               |
| Is the start of the pain / discomfort usually associated with a change in <u>the consistency / appearance of your stools</u> compared to how they normally are?                  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                               |

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Demographics *(for all groups A)*

We will now ask you some questions regarding your demographics

|           |   |
|-----------|---|
| Gender    | <input type="checkbox"/> Male<br><input type="checkbox"/> Female  |
| Ethnicity | White<br><input type="checkbox"/> English/Welsh/Scottish/Northern Irish/British<br><input type="checkbox"/> Irish |

|  |   |
|--|---|
|  | <input type="checkbox"/> Gypsy or Irish Traveller<br><input type="checkbox"/> Other: Please describe: _____<br>Mixed/Multiple ethnic groups<br><input type="checkbox"/> White and Black Caribbean<br><input type="checkbox"/> White and Black African<br><input type="checkbox"/> White and Asian<br><input type="checkbox"/> Any other Mixed / Multiple ethnic background.<br>Please describe: _____<br>Asian / Asian British<br><input type="checkbox"/> Indian<br><input type="checkbox"/> Pakistani<br><input type="checkbox"/> Bangladeshi<br><input type="checkbox"/> Chinese<br><input type="checkbox"/> Other. Please describe: _____<br>Black / African / Caribbean / Black British<br><input type="checkbox"/> African<br><input type="checkbox"/> Caribbean<br><input type="checkbox"/> Other. Please describe: _____<br><input type="checkbox"/> Arab<br><input type="checkbox"/> Other. Please describe: _____ |
| <b>What is the highest level of qualification you have achieved?</b> | <input type="checkbox"/> No formal qualifications<br><input type="checkbox"/> Vocational qualifications (e.g. NVQ)<br><input type="checkbox"/> School level qualifications (e.g. GCSE, O Level, A Level)<br><input type="checkbox"/> University degree (e.g. Bachelors degree)<br><input type="checkbox"/> Postgraduate degree (e.g. Masters, PhD)  |

# SUPPLEMENTARY FIGURE

The scree plot of the Principal Component Analysis.

