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Title:

General Practitioners' Perceptions of Irritable Bowel Syndrome: a Q-Methodological Study

Running head:

GP perceptions of IBS

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Abstract

Background

Irritable bowel syndrome (IBS) is a common disorder which imposes a significant burden upon societies, healthcare, and quality of life, world-wide. Whilst a diverse range of patient viewpoints on IBS have been explored, the opinions of the General Practitioners (GPs) they ideally need to develop therapeutic partnerships with are less well defined.

Objective

To explore how GPs perceive IBS, using Q-methodology, which allows quantitative interpretation of qualitative data.

Design and Setting

A Q-methodological study of GPs in Leeds, UK.

Method

Thirty-three GPs completed an on-line Q-sort in which they ranked their level of agreement with 66 statements. Factor analysis of the Q-sorts was performed to determine the accounts that predominated in understandings of IBS. Ten of the GPs were interviewed in person and responses to the statements recorded to help explain the accounts.

Results

Analysis yielded one predominant account shared by all GPs – that IBS was a largely psychological disorder. This account overshadowed a debate represented by a minority, polarised between those who viewed IBS as almost exclusively psychological, versus those who believed IBS had an organic basis, with a psychological component. The overwhelming similarity in responses indicates that all GPs shared a common perspective on IBS. Interviews suggested degrees of uncertainty and discomfort around the aetiology of IBS.

Conclusion

There was overwhelming agreement in the way GPs perceived IBS. This contrasts with the range of patient accounts of IBS, and may explain why both GPs and their patients face difficult negotiations in achieving therapeutic relationships.

Key words

Irritable bowel syndrome, Q-methodology, physician perspectives, patient perspectives, general practice

Background

Irritable bowel syndrome (IBS) is a common disorder which causes a range of gastrointestinal symptoms. These include abdominal pain, bloating and alteration of bowel habit with either constipation, diarrhoea or both. In the absence of a well understood aetiology, IBS is frequently described as a 'functional' disorder.

Whilst IBS does not reduce life expectancy [1], symptoms significantly affect quality of life [2]. The disorder is common worldwide, with a meta-analysis of global studies demonstrating pooled prevalence of 11% [3]. Given the ubiquity of this disorder and the lack of a 'cure', IBS is associated with significant burdens to societies and health care economies. Average annual care costs have been estimated at up to $7547 per patient in the United States[4]. Wider costs include periods of sick leave [5].

The aetiology of IBS remains unclear. Psychological causes such as stress, low mood and anxiety have traditionally been emphasised and continue to predominate [6]. Meanwhile, other factors including the role of diet [7], gut flora [8], abnormal sensitivity of gut viscera [9], gut dysmotility [10] and chronic low grade inflammation have all been posited [11].

Successful treatment of IBS is considered best achieved through a longitudinal therapeutic relationship with mutual understanding between clinician and patient [12]. In order to discriminate the different accounts ('factors'), in which patients frame their understanding of IBS, Stenner et al. invited patients with IBS to participate in a study using Q methodology[13]. This study generated seven different accounts, reflecting a wide range of beliefs (Table 1).

However, attaining a complete picture of the perceptions that enter into the therapeutic relationship requires a mirrored exploration of the corresponding narratives of the doctors who treat these patients. In the United Kingdom IBS is mainly managed in primary care [14], therefore this study explored the perceptions of GPs.

We aimed to elucidate the ways in which GPs perceive IBS by using Q-methodology to derive quantifiable accounts ('factors'). We then considered these factors in the light of those derived from patients in an earlier study[13]. Having elucidated these factors in statistical terms, we interviewed participants to elaborate on the reasoning behind their responses.

Methods

Q-Methodology

Q-methodology is a form of factor analysis which has been used to achieve a measure of statistical objectivity in the study of the subjective viewpoints. Factor analysis facilitates the description of correlations between variables. This is achieved through the use of 'factors' which are composites of groups of variables (viewpoints), which express the relationship between the individual variables that make it up[15].

Q-methodological studies involve participants ranking a series of statements based on the extent of their agreement or disagreement. Ranking is performed by placing each statement on a grid with a longitudinal axis running from strongly agree through to neutral and strongly disagree. The way in

which a participant sorts these statements, according to their agreement or disagreement, is known as a Q-sort.

Q-methodology has been used in health research to examine the health beliefs of patients [16] and the beliefs and experiences of clinicians [17]. It has the advantages of achieving a degree of statistical objectivity in the analysis of qualitative data, and allows investigators to discern multiple accounts, whereas other methodologies tend to outline more simplistic or dichotomous debates between perspectives.

Participants

Participants were General Practitioners (GPs), either fully qualified or in their final year of postgraduate training, practicing in Leeds, UK. GPs in earlier years of training were excluded to ensure that participants had attained reasonable exposure to general practice, including the management of patients with IBS. A total of 70 GPs were invited to participate, with the intention of recruiting approximately 30-40. This target was pragmatically derived based upon how many GPs could be realistically recruited, and also based on one convention of obtaining roughly half as many participants as there are statements in the Q-sort [13].

Data Collection

The statements used were based on the 58 that IBS patients had ranked in the study involving patients by Stenner et al[13]. A further eight statements were constructed following a review of the literature to identify and reflect contemporary medical perspectives. This resulted in a total of 66 statements (see supplementary material)

Participants submitted responses via a website hosting the Q-sort, created with the FlashQ package[18]. In order to proceed with the study, participants were required to indicate their informed consent on the website after being presented with a study information statement.

Data analysis

The Q-sorts were entered into Q-sort analysis software[19]. The initial analysis was performed with centroid analysis and indicated the presence of one overwhelming factor. Therefore further factor analysis was performed using principle components analysis (PCA), which is advocated in circumstances in which a single overwhelming factor is present[20]. Rotation was performed using varimax rotation.

Following initial analysis, 10 participants were interviewed for approximately 10 minutes and invited to elaborate on their ranking of a selection of statements. Participants were selected for interview according to how their views loaded onto different factors following analysis of the Q-sort. Written consent was obtained from all participants who were interviewed. The interviews were open-ended, in which the interviewer (SB) repeated a selection of the statements from the Q-sort to the participant in turn. The participants were reminded how they had scored the statement, and asked to explain in their own words why they had given this response (i.e. strongly agree, agree slightly, neutral, disagree slightly, strongly disagree) to the statement.

Interviews were recorded, transcribed and anonymised prior to the identification of illustrative, explanatory statements. No formal qualitative methodology was used, as the interviews were intended only to allow exploration of the thoughts and views which had informed the Q-sorts, and the factors which were derived from these. The interviewees were encouraged to discuss their views freely, in order to supplement the very structured way in which the Q-sorts were collected.

Results

Thirty-three participants completed Q-sorts. Just over half were female and their median age range was 40 to 50 years (Table 2). All were UK graduates with a median range of 10 to 20 years since graduation and most had completed primary care specialty training. The analysis yielded two factors (Table 3).

The *'*consensus factor*'*

This factor represents all of the Q-sorts completed by the 33 participants, with entirely positive loadings significant at the 0.01 level. This indicates a uniformity of opinion, with relatively similar responses to the statements. No single participant responded to the entire range of statements in a way that differentiated them from others.

This factor seemed to reflect strongly convergent medical opinion and we hence termed it the 'consensus factor'. It represents an account of IBS in which psychological factors feature predominantly. Accordingly the statement, 'feeling under pressure or stressed makes IBS symptoms worse' was ranked fourth. The consensus factor represents a conception of IBS as largely a psychological disorder, but not unequivocally so. Other contributors are recognised, with the statement 'it's true to say that diet plays an important part in IBS' ranked first, with the maximum level of agreement. The statement 'IBS is ultimately a psychological rather than a physical problem' met with slight disagreement. Meanwhile, organic causes of IBS were not discounted with the statement 'IBS arises from a combination of genetic and environmental factors' ranked fifth. Statements which do not reflect contemporary theories of pathophysiology, such as statements implicating lactose intolerance or female psychology and physiology attracted scores indicating strong disagreement.

Exploratory interviews conducted were conducted with five participants who loaded significantly on this factor alone and were broadly representative of the group. These elicited non-committal uncertainty about possible aetiological mechanisms or the role of organic pathology:

"Um, that's a 'maybe' I mean we have to have some more clear sort of scientific sort of pathophysiology and clear pathways of that um we may be on the cusp of it but I don't know" (participant 10)

Such clinicians readily admit uncertainty that surrounds IBS:

"It could be with some patients, we don't know what's going on and I think in my head I don't 100% have a definite understanding of what causes IBS, I don't think anyone really does but again it's a mixture of diet factors, anxiety factors and other factors" (participant 28).

Therefore the consensus factor can be seen as representative of medical opinion which references the role of both psychology in IBS as well as a possible organic basis for the syndrome, albeit uncertainty around specific pathophysiology.

T*he 'discord f*actor*'*

Factor analysis demonstrated the presence of a second factor, which we have termed the 'discord factor'. Six participants loaded with a significance of < 0.05 and a further five participants loaded with a significance of <0.01 on this factor.

This factor is bipolar, suggesting a subdued element of disagreement compared to the apparent unanimity evident in the consensus factor. Participants 20, 29 and 30 were situated on the negative side of this pole, whilst participants 4 and 8 occupied the positive pole. This factor indicates divisions between a minority of respondents over whether psychological or 'organic', pathological processes explained IBS. The majority of participants did not load significantly on this factor. Although the discord factor expresses a background debate, the strength of identification of participants with either pole was insufficient to represent a fracturing of the overall shared consensus.

Participants on the positive pole, scored highly those statements which suggested a psychological role for IBS symptoms. For example, the statement, 'IBS is ultimately a psychological rather than a physical problem' was agreed with moderately by participants 4 and 8. Similarly, slight and moderate agreement respectively was indicated with the statement, 'IBS can be the result of trying to cope with the stresses and strains of modern life' by these participants.

All five participants who loaded with a significance of < 0.01 on this factor were interviewed.
The perception that IBS is predominantly a manifestation of psychological distress emerged in the interviews with participants 4 and 8 (see supplementary material).

"I think the real cause is known and its psychological dysfunction, so the cause is known" (participant 4)

In contrast, those GPs at the negative side of the pole in this discord factor, (participants 20, 29 and 30) perceived a role played by organic pathophysiology, albeit in combination with psychological

factors. Therefore, the statement, 'IBS seems to me to be an umbrella term for lots of different illnesses which have yet to be defined' receives strong support from participant 20 with weak agreement from participants 29 and 30.

Members of the negative pole interviewed clearly expressed their intuition that organic pathophysiology, at least in part, mediates IBS. Participant 20 expressed the sense that IBS describes a diverse conglomerate of patients, with some experiencing symptoms due to psychological factors alone while other experiences suggest an unknown aetiology:

"*I think you know some people will have some mild IBS symptoms em and you think that's just your* gut reacting normally to you know certain things in your lifestyle or anxiety but then you have other people who are so disab*led by their symptoms…and you think that there…*must be some cause for *that that's not just anxiety because its so extreme*" (participant 20).

The majority of participants did not load significantly on the discord factor, but were subsumed within the consensus factor.

Discussion

GPs held strikingly similar perspectives on IBS. This is reflected by the overwhelming clustering of their views around one largely psychological account of IBS. Nevertheless, there was an element of discord regarding the extent to which psychological or other incompletely understood pathological processes account for IBS symptoms.

Our findings contrast sharply with an earlier, corresponding study of patients which generated seven different accounts[13]. Whereas the patient accounts competed between those who felt the condition was due to psychological factors and those who felt it was due to a 'physical disease', GPs' debate centred around a more graduated understanding of the relative importance of organic versus psychological causes. Even those GPs who were most open minded to putative pathological mechanisms also readily acknowledged the role of stress and worry. Meanwhile, the smaller grouping of GPs who also held discordant views acknowledged that the condition is manifested as a physical disorder and organic processes are theoretically possible.

The apparent, if over-simplified, 'organic versus psychological' debate surrounds many of the so called 'functional' disorders. In conditions such as fibromyalgia and chronic fatigue syndrome there is comparable evidence of a mismatch between physician and patient perspectives [21]. Further mirrored Q-methodological approaches could offer nuanced explorations for other disorders with conflicting perspectives.

Strengths and Limitations

We used a methodology that is well established in the social sciences, but remains a relatively novel approach to delineating physician narratives. We have presented a novel application of Q-methodology in mapping the ways in which illness is perceived by GPs, facilitating comparison with counterpart narratives elucidated from patients. Q-methodology permits statistical interpretation of qualitative data, and allows the relationships between the perspectives among responses participants in order to be quantified and analysed to extract narrative strands. This has allowed us to make thematic comparisons between the ways in which GPs and patients perceive IBS.

The main limitation of this study is that it was conducted within one city in the UK using a convenience sample of GPs all trained in the UK. However, the study included participants across a range of practices in a large City, serving a wide variety of local populations. The participants' basic demographic and professional characteristics suggest that they were not atypical[22]. Participation was restricted to fully qualified and final year GP trainees, in order to ensure sufficient experience of IBS. The study aimed to examine the 'real world' experience and views of GPs. Therefore the criteria used by participants to diagnose IBS were not evaluated prior to recruitment. Furthermore, the interviews yielded a range of views encountered in qualitative studies conducted elsewhere[23,24]. Previous work on GPs' perspectives have relied on interviews, without a means ranking and comparing the views of participants. The studies have also not been structured to mirror an exploration of patients' views[23].

A criticism may be made of that of the eight novel statements included to reflect contemporary theories of IBS, six suggested organic pathology. This proportion is greater than the 14 out of 58 statements in the study by Stenner et al. suggesting non-psychological causes. While this imbalance

may have influenced the results, these six statements represent a small proportion of the total (66), and participants responded differently to these.

Comparisons with existing literature

Existing qualitative work exploring the perceptions of GPs to IBS is limited. Interview based studies, have suggested that while most clinicians expressed uncertainty surrounding the aetiology of IBS, along with the intuition that the disorder is likely to have a predominantly psychological basis for IBS. These studies also suggested a reluctance to explore aetiological and exacerbating factors with patients.[23] Previous studies investigating perceptions of patients and clinicians in other chronic and 'functional' disorders, have revealed mis-matched beliefs surrounding expectations and aetiologies.[21]A Q-methodology approach offers a novel semi-quantitative way to identify and systematically describe patterns of shared or contrasting beliefs and hence priorities for negotiation and where barriers and levers are likely to exist in reaching concordance within consultations.

Implications for Research and Practice

The rich diversity of beliefs that patients have regarding their IBS is not reflected by the perspectives of the GPs who treat them. Despite this, even amidst apparent unanimity amongst clinicians in a single specialism of practice, elements of discord may be present. However, these represent subtle shades of opinion, when compared with those of patients. As new understandings of the aetiological mechanisms involved in IBS and corresponding treatment strategies emerge, such as a diet low in fermentable oligo-,di, and monosaccharides and polyols [25], there may be a shift in perceptions of GPs towards an 'organic' understanding of IBS. As new theories emerge, GPs are challenged to remain informed of contemporary research in an area with high patient expectations.

In common with other so-called 'functional' disorders, clinicians continue to occupy a spectrum of opinion regarding the role of psychological factors, as opposed to potential 'organic' causes. In the light of such uncertainty most clinicians refrain from manifesting strong opinions and seem to pragmatically address factors which may be amenable to amelioration, such as psychology or diet. Such interventions require clinicians to engage with the beliefs of their patients. Doctors may need to

remain mindful that their perceptions may clash with those of patients and could undermine the construction of therapeutic relationships.

Avenues for future research include eliciting perceptions from a more diverse group of GPs, for example doctors trained outside the UK, or GPs working in secondary care, to establish if more heterogeneous participants generate a greater range of accounts. Identifying the range of perspectives of secondary care physicians could offer insights into the possible competing sets of perceptions patients may encounter as they navigate between community based and specialist care.

Q-methodology could prove a useful means of mapping out accounts of patients and GPs in other contested conditions. By developing the understanding of the accounts of both groups, the chances of attaining a successful therapeutic relationship may be enhanced for a range of disorders.

Conclusions

Accounts of IBS given by patients and GPs contrast in their diversity and themes. GPs tend to view IBS in a uniform way, as a troublesome disorder in which psychological factors often predominate. However, a minority of GPs also perceive that an 'organic' disease process may be culpable. This relative homogeneity was manifest in the single overwhelming (consensus) factor on which all GPs were represented in this study, which overshadowed the secondary (discord) factor. By contrast, an earlier study using similar methodology focused on patient accounts, and discerned seven factors. This study demonstrates a model to explore the contrasting accounts of so-called 'functional disorders', and may help achieve greater mutual understanding between doctors and patients in treating these conditions.

Declarations & Acknowledgements

Ethical Approval

This study protocol was approved by the University of Leeds Research Ethics Committee, reference number: SoMREC/14/082.

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Conflict of Interests

No conflicts of interests declared for any of the authors of this study.

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Table 1. Factors extracted from the study by Stenner et al. investigating patient accounts of IBS.

Factor	**Themes**
A: 'IBS caused by worry and stress'	Stress believed to cause IBS Do not feel a 'physical' cause is responsible
B: 'A problem of body, not mind'	IBS is a 'physical' not psychological problem Role of dietary factors
C: 'Depressed, stressed and despairing of doctors'	IBS has caused stress and low mood, not vice versa Frustrated by inability of doctors to help, leading to reinforcement of symptoms ('a stress loop')
D: 'A partly psychological problem with definite physical consequences'	Physical disorder in which psychological factors play a role Stress understood to play a role in IBS, both as a cause and result of symptoms
E: 'IBS caused by past childhood trauma and present stress and diet'	Experiences in early life felt to be responsible
F: 'Disillusioned and suffering, but strangely attached to IBS'	Resigned to impact of IBS Stress not believed to be cause of IBS Disillusionment with medical profession
H: 'The responsibility axis'	A 'bipolar' factor in which the patient agrees or disagrees with the contention that individuals can improve symptoms through positive changes in lifestyle.

Table 2. Characteristics of participants recruited from January 2016 to April 2016 following emailed invitations, with initial data collection via an on-line survey ('Q-sort')

Characteristic	Number (%) n=33
Country of Graduation	
-United Kingdom	33 (100)
Female	18 (54.5)
Training status:	
-fully qualified	29 (87.9)
-final year trainee	4 (12.1)
Age:	
- <30 yrs	3 (9.1)
- 30 to 40 yrs	8 (24.2)
- 40 to 50 yrs	10 (30.3)
-50 to 60 yrs	9 (27.3)
- > 60 yrs	3 (9.1)
Time Since Primary Graduation	
- < 10 yrs	5 (15.2)
- 10 to 20 yrs	12 (36.4)
- 20 to 30 yrs	8 (24.2)
- > 30 yrs	8 (24.2)

Table 3. Factor loadings, significant factor loadings <0.05 indicated by underline, significance to <0.05 inidcated by bold. Significance at level 0.05 and 0.01 determined by formulae $1.96(1/\sqrt{n})\ and\ 2.58(1/\sqrt{n})\ respectively, where\ n = sample\ size$(32)

Participant	Consensus factor Loading	Discord factor Loading
1	**0.72**	-0.01
2	**0.66**	-0.26
3	**0.75**	0.06
4	**0.51**	**0.64**
5	**0.70**	0.01
6	**0.73**	0.28
7	**0.69**	0.21
8	**0.59**	**0.49**
9	**0.66**	0.14
10	**0.44**	0.22
11	**0.69**	0.08
12	**0.64**	-0.25
13	**0.78**	-0.10
14	**0.63**	-0.29
15	**0.76**	-0.08
16	**0.74**	0.25
17	**0.59**	-0.19
18	**0.78**	0.04
19	**0.76**	0.08
20	**0.76**	**-0.37**
21	**0.76**	-0.10
22	**0.58**	-0.03
23	**0.68**	0.10
24	**0.67**	0.10
25	**0.78**	-0.14
26	**0.73**	-0.22
27	**0.68**	-0.01
28	**0.61**	-0.15
29	**0.70**	**-0.42**
30	**0.53**	**-0.36**
31	**0.77**	0.29
32	**0.73**	0.22
33	**0.72**	-0.05