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ORIGINAL ARTICLE

The Experience of Uncertainty amongst Doctors working within Primary Healthcare in Malta

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Background

This is a cross-sectional observational quantitative study, with the aims of assessing experiences of uncertainty amongst doctors practising in primary healthcare in Malta and identifying contributing factors and management strategies for uncertainty.

Methods

An online anonymous questionnaire was formulated and doctors working in primary healthcare in Malta were invited to participate. Demographic data relating to years of practising experience, local training and public or private practice, was asked for. The revised physicians' reaction to uncertainty (rPRU) questionnaire, developed by Gerrity et al. in 1995, was used to obtain quantitative data on doctors' experiences of uncertainty, on which hypothesis testing was carried out to identify subgroups who experienced more uncertainty. Finally, respondents were asked which factors contribute to uncertainty in their practice and which management strategies they use.

Results

Data from 77 respondents was obtained. Hypothesis testing of rPRU scores showed statistically significant differences between males and females (p=0.033), trainees and their seniors (p=0.004), and groups with varying practice experience (p=0.018). No statistically significant difference was noted between doctors in private and public sectors, and doctors trained or training and those not trained with the local specialist training programme. Ambiguous illness presentation, separation of medical notes between primary and hospital care, and lack of continuity of care, contribute most to uncertainty in family medicine according to respondents. To address uncertainty, most respondents encourage patient reviews, share decision-making and explain red flags to patients.

Conclusion

Better support is needed for doctors to manage uncertainty in their practice, where continuity of care is an essential strategy.

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Uncertainty is inherently a major constituent of primary healthcare, sometimes even being referred to as one of the biggest hurdles the family doctor faces daily.[1] Uncertainty can be a significant source of stress and anxiety to both doctor and patient and indeed, trainees in family medicine are often advised to accept uncertainty as an inevitable part of primary healthcare.

However intolerance to uncertainty among both the primary care physicians and their patients can affect the medical decision-making process, as doctors may feel pressured to uncover illness at the earliest whilst patients may demand more investigations, despite the doctors' awareness that excessive testing and referrals may be harmful, beyond medical guidelines and evidence.[2] An inability to manage uncertainty in family practice well can lead to longer consultations and professionalism issues.[3]

Intolerance to uncertainty in primary care physicians has also been associated with burnout and low compassion satisfaction[4], thereby having negative effects on doctors' wellbeing during work hours, but potentially even in their personal lives. In a Maltese study by Baldacchino and Abela intolerance to uncertainty and challenges in its management were found to discourage foundation doctors from continuing their careers in family medicine.[5]

It is therefore worth comprehending the characteristics and factors which increase such uncertainty in family medicine, to address it and subsequently improve the primary healthcare service to patients.

Although this subject has been the basis of many qualitative literature and research, fewer quantitative studies have been produced. Quantitative data may be able to better demonstrate the magnitude of uncertainty in family medicine and has better comparability.

This is a retrospective cross-sectional observational study, with the aims of assessing the experiences of uncertainty in doctors practising in primary healthcare in Malta and identifying factors which increase such uncertainty, as well as strategies used to manage it. In so doing, this study may also indicate which subgroups of doctors experience more uncertainty, and who are possibly using maladaptive measures to try tackling uncertainty in their practice.

This information can be used to improve healthcare systems in family medicine, as doctors and patients can be supported further.

MATERIALS AND METHODS

Study Setting

Primary healthcare in Malta is split in two sectors – public and private. In the national tax-funded public sector, ten primary health centres and other smaller district clinics are currently operating throughout the Maltese islands.[6] The services of family doctors are mainly available through walk-in and only recently, in certain instances, by prior appointment.

Family doctors practising in the private sector are more widespread throughout the islands and may serve at their own or at a pharmacy clinic. However they often operate alone and unlike in the public sector, clinical notes and IT systems used in tertiary healthcare may not be available.

In 2007, the Specialist Training Programme in Family Medicine (STPFM) was launched for junior doctors wishing to specialise in family medicine, with the aim of "focus[ing] on the learning needs of family medicine", through a three-year programme overseen by trainers in family medicine and supervisors during hospital placements.[7]

Study Design and Participants

To gather data, an online questionnaire was created using Google Forms. The questionnaire was written in British English. To avoid missing data, all question fields were marked as mandatory to answer.

The questionnaire was split into four sections:

- demographic data
- the revised physician reaction to uncertainty (rPRU) questionnaire
- factors contributing to uncertainty in family practice
- strategies used to manage such uncertainty.

Statements were designed as closed questions, however in the third and fourth sections, participants had the option to elaborate further through free text. The full questionnaire is included in **Digital Supplementary File 1**.

This questionnaire was sent to the principal general practitioners of health centres in Malta and was then distributed by email to all doctors employed in their respective primary care institutions, together with an

invitation to participate. The questionnaire was also sent to members of the Malta College of Family Doctors' Google group, which includes family doctors exclusively practising in the private sector. Hence participation was on a voluntary basis only and subjects were recruited only by approaching their respective institutions or associations. All doctors working in primary healthcare in Malta were eligible to participate.

Data was collected between the 13th and 22nd March 2021 and was stored and analysed in Microsoft Excel.

This study was deemed exempt from ethics review however participants were told the intention of the study in an invitation letter attached to the questionnaire. A contact email address was also provided to potential participants to address any queries. Data remained anonymous and was not shared with third parties.

The demographic data gathered includes gender, age, number of years practising, and professional role. Respondents were also asked whether they practise in the private sector and whether they have undergone or are currently undergoing the STPFM in Malta.

In the second section, the rPRU questionnaire was implemented, a copy of which is also provided in **Digital Supplementary File 1**. This is a validated questionnaire developed in 1990 by Gerrity et al to measure physicians' affective reactions to uncertainty, and later revised in 1995.[8] It presents a total of fifteen statements, divided in four sections – 'Anxiety due to uncertainty' (five items), 'Concern about bad outcomes' (three items), 'Reluctance to disclose uncertainty to patients' (five items), and 'Reluctance to disclose mistakes to physicians' (two items). In the revised version of this questionnaire, Gerrity et al group the first two sections as 'Stress from uncertainty' and the last two sections as 'Reluctance to disclose uncertainty and mistakes'. Therefore for simplicity's sake, this latter arrangement was utilised for this study.

Statements were scaled on a six-point Likert scale, that is 'strongly agree', 'moderately agree', 'slightly agree', 'slightly disagree', 'moderately disagree', 'strongly disagree', wherein each response in the Likert scale for each of the fifteen statements was scored differently. Scores of the two main sections of the rPRU questionnaire, i. e. 'Stress from Uncertainty' and 'Reluctance to Disclose Uncertainty and Mistakes', as well as their total, were calculated for each respondent. Higher scores indicated higher levels of stress from uncertainty and/or increased reluctance to disclose uncertainty and mistakes.

Mean scores and variances were then calculated, as needed. Hypothesis testing was carried out in Microsoft Excel. Statistical significance was set at a probability (p) value of less than 0.05.

The t-test of independence was used to compare mean scores of the rPRU questionnaires between male and female respondents, between trainees (foundation doctors and trainees in family medicine) and their seniors (family doctors, senior family doctors and principal family doctors), between doctors practising in the public sector and those practising in the private sector, and between doctors trained or currently undergoing training with the STPFM and those not trained with the STPFM.

Single-factor ANOVA hypothesis testing was employed when comparing variance between doctors of ten years or less (≤10) of practicing experience, doctors of eleven to thirty years[11-30] of practicing experience, and doctors with more than thirty years (>30) of practicing experience.

In the third and fourth sections of our online questionnaire, we asked respondents which factors contributed to feelings of uncertainty in their practice and what strategies they used to manage such uncertainty, respectively. Respondents were able to tick more than one box in these sections and had the option of writing free text to elaborate further should they wish to do so.

This study adhered to the STROBE statement guidelines for cross-sectional studies.

RESULTS

A total of 77 respondents completed the questionnaire. The demographic characteristics of the study population are visualised in **Table 1**.

The total score of the rPRU questionnaire, as well as scores of its two main sections, 'Stress from uncertainty' and 'Reluctance to disclose uncertainty and mistakes', were compared between groups. Statistical significance at a p-value of less than 0.05 was obtained when comparing 'Stress from uncertainty' scores and the total rPRU scores in males and females. This was also the case when comparing 'Stress from uncertainty' scores, 'Reluctance to disclose uncertainty and mistakes' scores, and the total rPRU scores in trainee doctors and their seniors. Again statistical significance was obtained when

Table 1 *Characteristics of the study population, showing respondents' gender, age, number of years of practicing experience, professional roles, whether they practice in the private sector, and whether they were or are currently undergoing training with the Specialist Training Programme in Family Medicine (STPFM) in Malta*

Characteristic	n (%)
Sex	
Total	77 (100)
Male	47 (61.0)
Female	30 (39.0)
Clinical Practice (years)	
≤10	26 (33.8)
11 - 30	23 (30.0)
>30	28 (36.3)
Practicing Sector	
Public	30 (39.0)
Private	35 (45.5)
Age (years)	
21 – 30	18 (23.4)
31 – 40	17 (22.1)
41 – 50	6 (7.8)
51 - 60	22 (28.6)
Professional Role	
Foundation doctors	3 (3.9)
Family doctor trainees	12 (15.6)
Family doctors	38 (49.4)
Senior family doctors	22 (28.6)
Principal family doctors	2 (2.6)
Formal Family Medicine Training	
Current or Completed training	35 (45.5)
No formal training	42 (54.6)

comparing 'Reluctance to disclose uncertainty and mistakes' scores and the total rPRU scores among groups of doctors with differing years of practice experience.

No statistically significant difference was noted when comparing scores between doctors who practice privately and those in the public sector, and between doctors who were trained or training with the STPFM and those not trained with the STPFM. Results of this analysis can be seen in Table 2.

When addressing factors which contribute to feelings of uncertainty in primary healthcare, most respondents (n = 56, 72.73%), stated 'ambiguous or vague presentation of illness' as one such factor which they encountered in their practice.

'Having separate medical notes between primary care and hospital care' was the second most agreed upon factor which contributed to uncertainty (n = 47, 61.03%,), whilst 'lack of continuity of care' was the third most agreed upon factor (n = 45, 54.44%,).

Asked which strategies respondents use to cope with feelings of uncertainty in their practice, most stated that they ask patients to come for a future review (n = 65, 84.41%,).

64 respondents (83.12%) stated they share decision-making with the patient. 62 respondents (80.52%) stated that they explain red flags and warning signs to patients, whilst 61 respondents (79.22%) stated that they seek to identify patients' main concerns.

Responses to the third and fourth sections of the questionnaire can be visualised in Table 3 and Table 4 respectively.

DISCUSSION

The Maltese medical council register of family medicine specialists [9] has 63.72% male and 36.08% female family doctors currently registered at time of writing. For the sake of comparing like with like, when excluding study respondents who were still in training, 66.13% (n = 41) were males and 33.87% (n = 21) were females. This makes this section of the study population representative for gender.

A considerable proportion of doctors in our study population reported more than 30 years of practising experience (36.4%) while of trainee respondents was proportionally lower totalling 19.5% of the total study cohort. Therefore a representative skew towards senior doctors can be inferred from the study results.

Table 2 *Results from statistical hypothesis testing of the revised physicians' reaction to uncertainty (rPRU) scores in 77 doctors working in primary healthcare in Malta*

	Stress from Uncertainty Score		Reluctance to Disclose Uncertainty and Mistakes Score		Total rPRU Score	
	Mean	**p value**	**Mean**	**p value**	**Mean**	**p value**
Gender						
Male	26.1	*0.036*	18.1	0.27	44.2	*0.033*
Female	30.6		19.5		50.2	
Level						
Trainee Doctors	32.9	*0.025*	21.7	*0.025*	54.6	*0.004*
Senior Doctors	26.7		18.1		44.8	
Experience						
≤10 years	*100.4		*26.9		*144.6	
11-30 years	*77.6	0.089	*25.6	*0.026*	*130.6	*0.018*
>30 years	*65.9		*37.2		*138.0	
Working place						
Private Sector	26.9	0.45	17.4	0.12	44.3	0.198
Public Sector	28.5		19.5		48.0	
Trained or training with STPFM						
Yes	28.1	0.88	17.9	0.28	45.9	0.70
No	27.7		19.3		47.0	

** The indicated numerical figures are variances, not mean scores, as single-factor ANOVA hypothesis testing was used to compare differences between groups.*

The rPRU questionnaire was used to identify subgroups within the study population who experienced more uncertainty in their practice. Such uncertainty can lead to negative affective reactions within the physicians as measured by the 'Stress from uncertainty' scale in the rPRU The physician may also exhibit particular maladaptive behavioural responses to uncertainty, such as an unwillingness to admit uncertainty and misjudgements in patient management and may feel disinclined to discuss and reflect on experiences of uncertainty with colleagues and patients, as measured by the 'Reluctance to disclose uncertainty and mistakes' scale in the rPRU questionnaire.

It is well-documented that anxiety, and indeed anxiety disorders [10], are more prevalent in women. In our study, female doctors were observed to have higher 'Stress from uncertainty' scores on the rPRU questionnaire than male doctors, which was statistically significant at p = 0.036. However no statistically significant difference was shown in 'Reluctance to disclose uncertainty and mistakes' between genders. This suggests that the female doctors in our cohort felt more stressed in the face of uncertainty in their practice than their male counterparts. However maladaptive responses to uncertainty, with reference to reluctance to disclose uncertainty and mistakes with patients and colleagues, were not associated with gender.

When comparing the total rPRU scores in groups of doctors with different years of practise experience, i. e. ≤10 years, 11-30 years and >30 years, a statistically significant difference emerged (p = 0.018). Similarly comparison of rPRU scores between trainee doctors and their seniors showed statistically significant differences in both the 'Stress from uncertainty' and the 'Reluctance to disclose uncertainty and mistakes' categories (p = 0.025 and p = 0.025 respectively). This agrees with findings from Cooke et al's study carried out among Australian trainees in family medicine [11], as well as from Politi et al's study among primary care physicians [12]

Experience helps junior doctors to learn skills to deal with uncertainty in medicine. Trainees might be more

Table 3 *Factors contributing to uncertainty in family medicine, as stated by 77 doctors working in primary healthcare*

	n	%
Ambiguous or vague presentation of illness	56	72.7
Having separate medical notes between primary care and hospital care	47	61.0
Lack of continuity of care as outcomes of consultations remain unknown	45	58.4
Limited availability of quick investigations, including point-of-care blood tests, ECG's and imaging modalities	43	55.8
Stressful work environment	36	46.8
Limited knowledge/practice in primary healthcare	28	36.4
Doctor's high expectations for him/herself	27	35.1
Patients' inappropriate prioritization of problems	27	35.1
Patient anxiety	25	32.5
Lack of comprehensiveness in medical records in primary healthcare	22	28.6
Doctor's negative past experiences	21	27.3
Lack of information available on logistical protocols in primary healthcare and hospital care	21	27.3
Doctor's low self-esteem	20	26.0
Limited time spent during patient consultation	19	24.7
Doctor's anxiety and stress	18	23.4
Medical knowledge/practice focused on acute care rather than on primary healthcare	17	22.1
Limited skill/experience in diagnostic and clinical reasoning skills	17	22.1
Lack of other resources	17	22.1
Lack of support available from colleagues and/or administrative staff	15	19.5
Lack of positive feedback from peers	12	15.6
More familiarity with working in a team, rather than solo	11	14.3
Patient dissatisfaction with outcome of consultation	11	14.3
Limited access to learning new evidence-based methods of care	10	13.0
Limited communication skills	5	6.5
Other: Limited GP empowerment	1	1.3
Other: EPR can be slow, very hard to refer to, and not efficient	1	1.3
Other: "Patients always expecting a diagnosis and their belief that all ailments have a medical 'diagnostic tag' which a GP in his limited clinic should arrive to."	1	1.3
Other: "Management of uncertainty is a key primary healthcare skill"	1	1.3
Other: "COVID19 posing a constantly changing situation"	1	1.3

Table 4 *Strategies used to manage uncertainty in family medicine, as stated by 77 doctors working in primary healthcare*

	n	%
Asking the patient to come again for a review in the near future	65	84.4
Sharing decision-making with the patient	64	83.1
Explaining red flags and warning signs to patients	62	80.5
Seeking to identify the patient's main concern	61	79.2
Safety netting	58	75.3
Referring the patient to a field specialist for assessment and management	54	70.1
Asking for help or advice from colleagues or seniors	53	68.8
Accepting that uncertainty is inevitable	51	66.2
Looking up information during the patient consultation	46	59.7
Communicating your uncertainty with the patient	44	57.1
Looking up evidence-based research and guidelines	37	48.1
Allotting more time to the patient consultation	34	44.2
Reflecting after the patient consultation, identifying skills which need to be improved and implementing ways to do so	31	40.3
Ordering tests and investigations to avoid missing anything	29	37.7
Teaching younger doctors and engaging in discussion, thus using this as a means of refreshing memory and keeping yourself up to date	22	28.6
Sleeping on it and thinking about the particular problem even during non-working hours	15	19.5
Prescribing medications/treatment that may be necessary in the future, but not at present	13	16.9
Other: "Keeping up to date especially with things being done abroad - maintaining contact with a good support network"	1	1.3

familiar with seeing the acute phase of illness and are still developing their diagnostic and clinical reasoning skills.[3] They can also feel stripped from the reassurance of working in a large team, as they now work more independently in primary care.[3] Trainees are generally encouraged to discuss thoughts and concerns with their more-experienced supervisors and seniors, as this in itself serves as a useful tool in dealing with uncertainty[10] as this can help doctors reflect on their patient consultations, identify what should be improved and formulate solutions to do so.

rPRU scores of doctors practising in public and private sectors were also compared using hypothesis testing, however no statistically significant difference emerged. This is despite that private family doctors tend to be more limited in resources, such as restricted access to hospital medical notes and limited investigations, and despite the more solitary environments private doctors usually practise in. This result indicates that the private family doctors in our study population may have developed ways to manage uncertainty and balance any disadvantages they may have compared to the public sector. Such adaptations can be achieved through experience, especially when considering that n = 20 (64.52%) from our total of 31 doctors who practise privately have more than 20 years' practising experience, as well as other strategies to manage uncertainty which will be discussed later in this section.

Finally when comparing rPRU scores among doctors trained or currently training with the STPFM and those not trained with the STPFM, no statistically significant difference was noted. As the STPFM was

launched in 2007, doctors studying before did not have a local specialised training programme available to them. This result implies that these doctors may utilise alternative educational tools to continue and improve their professional development, which help them adapt to deal with uncertainty in their practice.

Uncertainty can be attributed to various interplaying factors. These may be disease-centred, such as presentations which are vague or at the early stages of disease, making diagnosis difficult. Factors contributing to uncertainty may also be patient-centred – for example, patients might prioritise problems differently and have underlying psychosocial and economic challenges which may complicate patient management. They may even be doctor centred. Here inexperience and limited diagnostic and clinical reasoning skills may be concerning especially for trainees.[3] The doctor's personality traits such as neuroticism, may also come into play and further increase stress from uncertainty.[13]

61.04% (n = 47) of doctors in our cohort stated that having separate medical notes between primary and hospital care contributes to uncertainty. In 2020, the electronic patient record (EPR) system for Maltese primary healthcare was launched and is currently utilised in the public sector[14], however its uptake by private family doctors has been less than desirable.

58.44% (n = 45) of doctors stated that lack of continuity of care adds to uncertainty as outcomes of consultations remain unknown. In a Maltese study looking at patients' experiences in private and public sectors of primary healthcare, Pullicino et al indicated that the private sector offered better continuity of care[15], which is one of the key characteristics of family medicine, as outlined by European Academy of Teachers in General Practice in their definition of general practice.[16]As public-sector health centres are manned by different doctors, continuity of care can be challenging especially for walk-in patients. To address this, appointment clinics have started operating in 2021, where patients can make future appointments with the same primary care physician. However patients with urgent complaints who attend public-sector primary health centres would still be seen as walk-in cases by the doctor available at the time.

Lastly in our questionnaire, doctors were asked which strategies they use to manage uncertainty in their practice. 84.42% (n = 65) stated that they recommend patients to come again for a follow-up appointment, thereby maintaining continuity of care. 83.12% (n = 64) stated they share decision-making with patients, taking into consideration their needs and preferences using a non-paternalistic approach. According to the National Institute for Clinical Excellence shared decision-making has the advantage of making sure patients comprehend benefits, harm and possible outcomes of different management options. It also empowers them to make informed decisions about their management.[17]

Doctors in our study population also stated that they manage uncertainty by explaining red flags and warning signs to patients (n = 62, 80.52%), they seek

SUMMARY BOX

What is already known?

- Uncertainty is frequently encountered in family medicine and it may lead to stress in both primary care physicians and patients.
- Intolerance to uncertainty among both the primary care physicians and their patients can lead to longer consultations, doctor professionalism issues, and affect the medical decision-making process. It has also been associated with burnout and low compassion satisfaction in primary care physicians and was one factor which discouraged junior doctors from continuing their careers in family medicine.
- Qualitative literature and research uncertainty in family medicine have been published, wherein management strategies are also recommended. However fewer quantitative studies have been produced.

What are the new findings?

- Negative affective reactions to uncertainty were present more among female doctors and trainee doctors. Maladaptive behaviours in reaction to uncertainty were present among trainee doctors.
- Ambiguous presentations of illness, having separate medical notes between primary and hospital care, and lack of continuity of care, contribute to uncertainty in family medicine.
- To manage uncertainty in family medicine, doctors encourage patient reviews, share decision-making with patients and explain red flags.
- Further support for doctors is needed to manage uncertainty in family medicine in a healthy manner. Primary healthcare clinics can also help in doing so through centralised national healthcare IT systems and appointment clinics to maintain continuity of care.

to identify patients' main concerns (n = 61, 79.22%), and they perform safety netting in their consultations (n = 58, 75.32%). These principles are encompassed in the Calgary-Cambridge referenced observation guide, as developed by Kurtz and Silverman in 1996, which delineates skills for effective communication between doctor and patient.[18]

LIMITATIONS

As recruitment to the study was voluntary, sampling bias may have occurred, especially given the fact that a larger proportion of older family practitioners were present in our study population. The skewed population could have affected data interpretation.

This study assesses the experience of uncertainty in doctors working in primary healthcare and does not explore if and how this uncertainty affects management of the patient's illness or patient satisfaction with the consultation, as it was not the scope.

Moreover the study population did not only include qualified family doctors (80.5%) but also trainee Family Doctors (15.6%) and 3 (4%) Foundation Doctors who, despite showing interest in Family Medicine might not eventually opt for working in the family medicine specialty.

CONCLUSION

By means of a quantitative validated tool, this study showed that negative affective reactions to uncertainty were present more among female doctors and among trainee doctors. Maladaptive behaviours in reaction to uncertainty were present among trainee doctors. Better support is needed for primary care physicians to manage uncertainty in their practice, through self-reflection and discussions with colleagues and supervisors, as this may help in coming up with healthy ways of management of uncertainty. Having separate medical notes between primary and hospital care, and a lack of continuity of care can further contribute to uncertainty in family medicine. These can be managed by encouraging widespread use of a centralised electronic patient record system and increasing accessibility of hospital IT systems to doctors in primary healthcare, both in the private and public sectors, to maintain continuity of care and decrease uncertainty. Utilisation of appointment clinics also help maintain continuity of care and may also provide a protected time slot for the doctor-patient consultation.

Further studies could be done to re-assess experiences of uncertainty among specific doctor subgroups after implementation of recommendations to decrease uncertainty in family medicine.

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