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The quality, safety and content of telephone and face-to-face consultations: a comparative study

B McKinstry,¹ V Hammersley,¹ C Burton,¹ H Pinnock,¹ R Elton,¹ J Dowell,²
N Sawdon,¹ D H,³ G Elwyn,⁴ A Sheikh¹

¹Centre of Population Health Sciences: General Practice Section, University of Edinburgh, Edinburgh, UK ²Tayside Centre for General Practice, University of Dundee, Dundee, UK ³Centre for Rural Health Research and Policy, University of Aberdeen, Aberdeen, UK ⁴Department of Primary Care and Public Health, School of Medicine, Cardiff University, Cardiff, UK

Correspondence to

Dr Brian McKinstry, Centre of Population Health Sciences: General Practice Section, University of Edinburgh, 20 West Richmond Street, Edinburgh EH8 9DR, UK;
brian.mckinstry@ac.uk

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ABSTRACT

Introduction Telephone consulting is increasingly used to improve access to care and optimise resources for day-time work. However, there remains a debate about how such consultations differ from face-to-face consultations in terms of content quality and/or safety. To investigate this, a comparison of family doctors' telephone and face-to-face consultations was conducted.

Methods 106 audio-recordings (from 19 doctors in nine practices) of telephone and face-to-face consultations, stratified at doctor level, were compared using the Roter Interaction Analysis Scale (RIAS) (content measure), the OPTION (observing patient involvement in decision making scale) and a modified scale based on the Royal College of General Practitioners (RCGP) consultation assessment instrument (measuring quality and safety). Patient satisfaction and enablement were measured using validated instruments. The Roter Interaction Analysis Scale scores were compared by multiple linear regression adjusting for covariates; other continuous measures by χ^2 and Student t tests and binary measures as odds ratios.

Results Telephone consultations were shorter (4.6 vs 9.7 min, $p<0.001$), presented fewer problems (1.2 vs 1.8, $p<0.001$) and included less data gathering, counselling/advice and rapport building (all $p<0.001$) than face-to-face consultations. These differences remained significant when consultation length and number of problems were taken into account. Telephone consultations were judged less likely to include sufficient information to exclude important serious illnesses. Patient involvement and satisfaction outcomes were similar in both consultation types.

Conclusion Although telephone consultations are convenient and judged satisfactory by patients and doctors, they may compromise patient safety more than face-to-face consultations and further research is required to elucidate this. Telephone consultations may be more suited to follow-up and management of long-term conditions than for in-hours acute management.

Increasingly in medical practice, the telephone has become the first point of contact to book appointments and obtain repeat prescriptions and for advice and consultation. Initially adopted for out-of-hours care,¹ more recently, the telephone has been used to increase access and optimise available resources for day-time work.² However, despite the advantages of telephone consulting to patients with work or domestic commitments, or those who are geographically isolated or housebound, there remains considerable debate about which types of consultation are best managed in this way in terms

of quality, safety, patient centredness and cost-effectiveness both in USA and Europe.^{3–9}

Studies have consistently demonstrated that telephone consultations are briefer than those conducted face to face,^{6 10 11} but the reasons for this are unclear. Possible explanations include discussion of fewer problems, loss of examination time and, more generally, less social speech and/or less patient-centred or holistic care. Systematic reviews^{11–13} have reported that very few studies have compared the content of telephone with face-to-face consultations. One randomised controlled trial of telephone management versus normal face-to-face management of acutely presenting conditions demonstrated that although telephone consultations were much shorter, patients managed by telephone were 50% more likely to reconsult in the following 2 weeks. It was not clear if this was due to unresolved or ongoing concern about the presenting problem or other issues.⁶

In this study we aimed to determine if face-to-face and telephone consultations differ with regard to the number and type of problems presented; the quantity of data gathering and patient counselling that took place; the amount of rapport and partnership building; the degree to which doctors tried to involve patients in decision making; the quality and safety of the consultation; and patient satisfaction and enablement.

METHODS

Recruitment

We approached 18 practices (68 doctors) identified by the Scottish Primary Care Research Network and invited the doctors to take part. Because these were all training practices, we also wrote to eight non-training practices (25 doctors).

Participating doctors were asked to record five consecutive telephone and five face-to-face consultations. Doctors used portable digital recorders for the face-to-face consultations so that the entire conversation from the time the patient was called from the waiting room was recorded. A similar recorder, linked to a bridge device, recorded telephone calls. On the advice of the ethics committee, consent was obtained in two phases. First, patients requesting appointments were asked by the receptionist for permission to tape-record their consultations. Written consent was then obtained by post, giving permission for the recording to be analysed. This process avoided the impact on the consultation, which would have resulted if the doctors had been involved in obtaining consent.

Data collection was spread over different days of the week and times of day to ensure different types

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of consultation (eg, booked or “extras”). Doctors were asked to record if the problem was new or follow-up, patient-initiated or doctor-initiated, and to record a simple measure of their satisfaction with the consultation using a previously validated instrument.¹⁴

Patients were posted (with up to two reminders) a validated questionnaire¹⁵ to determine their preference for telephone or face-to-face consulting, ease of access (minor wording changes were required for patients attending the surgery) and measure of satisfaction with the consultation along with the Patient Enablement Instrument.¹⁶

Because we intended to match telephone and face-to-face consultations at doctor level, only doctors for whom there were usable recordings of both telephone and face-to-face consultations were included.

Measuring the content, quality, safety and patient involvement of consultations

Content

The number of problems presented was counted and the specific content of the consultation analysed using the Roter Interaction Analysis System (RIAS), a validated method of consultation analysis,¹⁷ which involves recording the presence of 40 mutually exclusive categories for every utterance in the consultation and is designed to directly reflect the content and context of routine medical dialogue (see results in table 1 for main categories). This was independently assessed by one of two researchers with 37 randomly selected cases being assessed by both researchers.

Consultation quality and safety

Consultations were compared against 13 criteria published by the Royal College of General Practitioners (see table 2).¹⁸ These describe a range of desirable consultation behaviours including ensuring that adequate information has been obtained to make a diagnosis and giving appropriate explanation to patients. Because this method had never previously been applied to audio-recordings, three experienced general practitioners independently rated 30–40 consultations against the criteria to establish inter-rater reliability of the parameters. After further clarification of the marking schema, two raters went on to rate the remaining 70 consultations. They were asked to decide for the main problem if the desired behaviour was “present”, “absent”, if they were “unsure” or if it was “not applicable for this consultation”.

Patient involvement

The OPTION (observing patient involvement in decision making) is a validated measure of patient involvement in decision making,¹⁹ although not previously used in telephone consulting. This was scored by two researchers independently.

The number and type of problems (physical, psychological or social) discussed during the consultation were recorded. Social speech was measured by counting “personal remarks”, a component of the RIAS. In keeping with recent work by Innes *et al*²⁰ and Paasche-Orlow and Roter,²¹ 11 specific categories were combined into composites reflecting four different activities (ie, rapport building, data gathering, patient education and counselling, and partnership). Based on the work of Mead and Bower,²² a second pair of composite measures was calculated to reflect doctor dominance and patient centredness. All eligible consultations were analysed by one of two researchers and a random 35% sample by both.

Statistical methods

We explored differences between telephone and face-to-face consultations (stratified by doctor) with regard to the

parameters above and also the level of patient satisfaction/enablement in relation to the presence or absence of the content and quality measures. Interobserver reliability was assessed by prevalence-adjusted κ^{23} for binary outcomes and Pearson correlation for continuous outcomes. The telephone and face-to-face RIAS scores were compared by χ^2 and Student *t* tests, and also by multiple linear regression or analysis of covariance adjusted for age, sex, consulting general practitioner, consultation duration, number and type of problem and whether the consultation was initiated by the doctor or patient. Differences between telephone and face-to-face consultations in quality and safety criteria were reported as odds ratios with 95% confidence interval, calculated using small sample adjustment.

Role of the funding source

The sponsor of the study had no role in study design, data extraction, data analysis, data interpretation or writing of the report. The corresponding author had full access to all the data in the study and had responsibility for the decision to submit for publication.

RESULTS

Practice recruitment

Nine practices and 21 doctors participated, of whom 19 experienced doctors (median age 45 years; range 31–58 years) provided analysable consultations of both types. Practices varied in their use of telephone consulting from 14% to 40% with a median of 24% as a proportion of all consultations. This estimate was based on a 2-week survey of computerised practice appointment systems. We accepted this might miss some informal doctor-initiated calls.

Patient recruitment

Almost all patients (97%) agreed initially to have their consultations recorded (telephone, *n*=121; face to face, *n*=145). However, despite two reminders, 45 (37%) telephone consulters and 43 (30%) face-to-face consulters did not return their second written consent. It was difficult to collect sequential telephone consultations because they were often scattered throughout the day and doctors sometimes forgot to switch on the recorder, so some recordings were not made for all consented patients. Telephone and face-to-face recordings were matched at doctor level; however, because of technical problems (poor recordings particularly of some mobile telephone consultations) or very low clinical content (eg, patient requested to attend the surgery without any exploration of the problem *n*=4) and subsequent lack of matching recordings (largely face to face), some consultations were not coded (*n*=73). This left 46 telephone and 59 face-to-face recordings matched at doctor level. There were no significant demographic differences between consenting and non-consenting patients, although there was a trend towards younger males among non-consenters. Table 3 shows the final sample characteristics that broadly reflects the demography of patients who present to general practitioners in Scotland.²⁴ The mean number of recordings analysed per doctor was 5.6 (SD 2.3).

Content of consultations and case mix

Table 3 summarises the content of the analysed consultations. Face-to-face consultations were more likely to be follow-ups and doctor-initiated, were longer and explored more problems than telephone consultations. There was a trend towards fewer psychological consultations in the telephone group. The relationship between the number of problems discussed and length of consultation was non-linear (see table 4).

Table 1 RIAS doctors: frequency of code groupings according to consultation type (after Paasche-Orlow and Roter²¹)*

Communication behaviour	Unadjusted			Adjusted*	
	Telephone	Face to face	p Value	p Value	95% CI
Data gathering					
Closed-ended biomedical questions	3.5	8.6	0.002	0.033	+0.3 to +7.7
Open-ended biomedical questions	1.4	3.1	0.008	0.09	−0.2 to +3.1
Closed-ended psychosocial questions	0.2	1.9	0.008	0.044	+0.1 to +3.5
Open-ended psychosocial questions	0.3	0.3	1.00		
Bids for clarification	0.1	0.5	0.09		
Total count	5.5	14.4	<0.001	0.003	+2.9 to +13.3
Patient education and counselling					
Provides biomedical info	7.3	19.4	<0.001	<0.001	+4.8 to +13.2
Provides psychosocial info	1.0	1.7	0.36		
Counsels biomedical	2.7	5.4	0.012	0.06	−0.1 to +5.3
Counsels psychosocial	0.2	0.3	0.56		
Total count	11.2	26.9	<0.001	<0.001	+5.8 to +17.2
Rapport building					
Personal remark	2.2	3.4	0.051		
Laughter/tells jokes	0.6	3.1	<0.001	<0.001	+1.1 to +3.2
Approval	0.2	0.6	0.08		
Empathy	0.3	0.5	0.37		
Concern	0.1	0.3	0.045	0.66	−0.3 to +0.4
Reassure	0.8	3.6	<0.001	0.012	+0.5 to +3.6
Legitimate	0.1	0.2	0.25		
Total count	4.1	11.8	<0.001	<0.001	+3.9 to +10.0
Partnership building					
Paraphrase (checks understanding)	0.1	0.1	0.77		
Partnering (shows partnership/support)	0.2	0.4	0.25		
Asks for opinion	0.2	0.7	0.023	0.30	−0.4 to +0.8
Asks for understanding	0.1	1.1	0.28		
Asks for reassurance	0.0	0.1	0.31		
Total count	0.6	2.4	0.044	0.26	−1.2 to +4.2
Disagreement					
Shows disapproval	0.1	0.4	0.33		
Shows criticism	0.0	0.1	0.16		
Total count	0.1	0.5	0.27	0.69	−0.7 to +1.1
Giving direction					
Transition	0.5	1.1	0.09		
Gives orientation	0.6	3.9	<0.001	0.15	−0.6 to +4.1
Total count	1.1	5.0	<0.001	0.09	−0.4 to +4.5
Total count of all codes	34.0	74.5	<0.001	<0.001	+19.5 to +43.9
RIAS patients: frequency of code groupings according to consultation type*					
Data gathering					
Closed-ended biomedical questions	1.2	1.6	0.29		
Open-ended biomedical questions	0.2	0.5	0.09		
Closed-ended psychosocial questions	0.1	0.2	0.35		
Open-ended psychosocial questions	0.03	0.01	0.81		
Bids for clarification	0.1	0.1	0.47		
Total count	1.5	2.4	0.09	0.28	−0.6 to +2.1
Provides information					
Provides biomedical information	14.2	27.8	<0.001	0.028	+1.0 to +16.1
Provides psychosocial information	1.8	7.9	0.002	0.06	−0.3 to +8.9
Total count	16.0	35.8	<0.001	0.002	+5.0 to +20.1
Rapport building					
Personal remark	1.8	2.4	0.34		
Laughter/tells jokes	0.7	4.9	<0.001	0.003	+1.0 to +4.4
Approval	0.2	0.2	0.71		
Empathy	0.0	0.0	n/a		
Concern	0.3	0.6	0.17		
Reassure	0.1	0.4	0.08		
Legitimate	0.0	0.0	n/a		
Total count	3.1	8.6	<0.001	0.003	+1.4 to +6.2
Partnership building					

Continued

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Table 1 Continued

Communication behaviour	Unadjusted			Adjusted*	
	Telephone	Face to face	p Value	p Value	95% CI
Paraphrase (checks understanding)	0.1	0.0	0.09		
Partnering (shows partnership/support)	0.0	0.0	n/a		
Asks for opinion	0.03	0.0	0.24		
Asks for understanding	0.06	0.06	0.96		
Asks for reassurance	0.0	0.2	0.046	0.66	−0.2 to +0.2
Total count	0.1	0.2	0.46	0.55	−0.2 to +0.4
Disagreement					
Shows disapproval	0.5	0.5	0.92		
Shows criticism	0.2	0.1	0.29		
Total count	0.7	0.6	0.79	0.25	−1.9 to +0.5
Direction					
Transition	0.1	0.2	0.63		
Gives orientation	0.1	0.1	0.48		
Total count	0.2	0.3	0.49	0.63	−0.7 to +0.4
Total count of all codes	29.3	62.2	<0.001	<0.001	+9.3 to +30.4

RIAS, Roter Interaction Analysis Scale.

*The figures represent the average number of utterances of this type in each sort of consultation. Adjusted p values and confidence intervals for mean difference between face-to-face and telephone consultations are shown where the unadjusted result was significant, and take account of age, sex, number and type of presented problems, doctor/patient initiation, length of consultation and consulting doctor.

Roter Interaction Analysis Scale

The two raters' scores were well correlated ($r=0.83$ for doctor and 0.87 for patient parameters; $p<0.001$ for both). There were significant differences in the content of the two consultation types (table 1) even after adjusting for confounding variables. In general, doctors engaged in more data gathering, counselling and rapport building in face-to-face consulting, suggesting a richer consultation. Measures of "verbal dominance" (doctor speech divided by patient speech)²¹ and of "patient centredness" (reflecting the balance of psychosocial and attentiveness and biomedical talk)²² were similar between the two consultation types.

In turn, patients provided significantly more information in face-to-face consultations (35.8 vs 16.0 items per consultation, adjusted $p<0.001$) and engaged in more rapport building (8.6 vs 3.1, adjusted $p<0.001$), but other parameters were similar in both modes of consultation.

Consultation quality and safety

Overall, the quality of the consultations was judged to be high, with a mean of 8.1 (SD 2.7) (62%) of 13 criteria met and a further 1.5 (SD 2.1) (12%) judged not applicable to the consultation. Inter-rater reliability varied between criteria but was good to excellent ($\kappa>0.7$) for important safety issues such as collecting sufficient information for diagnosis and making an appropriate management plan, although agreement on what constituted adequate "safety netting" was weaker. Table 2 summarises the analysis of consultation quality for items that were rated as either present or absent, excluding items where the rater was unsure or regarded as not applicable. Both raters independently found that the safety criterion "obtains sufficient information to include or exclude likely relevant diagnoses" was significantly less likely ($p<0.01$) to be fulfilled in telephone consulting. There were no other significant quality or safety differences found between the two media found by both raters independently.

OPTION score (patient involvement)

This did not differ between the two groups with low levels of patient involvement in both consultation types. Inter-rater reliability was 0.62. The score was significantly correlated with duration ($r=0.23$, $p=0.018$) but not with age or sex. The mean

(SD) score expressed as a percentage of maximum score was 16% (10.8) in the telephone group versus 19% (9.4) in the face-to-face group ($p=0.12$). These scores are similar to scores reported in previous studies for routine consultations for practitioners untrained in shared decision making.¹⁹

Patient and doctor questionnaires, satisfaction and enablement

There was no difference in satisfaction between telephone and face-to-face consulters. Ninety-seven per cent of telephone consulters and 90% of face-to-face consulting patients were either satisfied or very satisfied with their overall consultations with similar high satisfaction rates for the time they had to wait, the attitude of the doctor, the quality of explanation and the treatment they received. All were happy with the medium actually used. Although in the unadjusted analysis telephone consulters were more likely to be "enabled" by their consultations (2.6 vs 1.41 $p=0.013$), this difference disappeared ($p=0.42$) when confounders were taken into account. General practitioners were also either very or quite satisfied with both the telephone (85%) and face-to-face (87%) consultations.

Correlation of consultation characteristics with enablement and satisfaction

We correlated all the patient demographics and consultation characteristics, and the parameters listed in RIAS and OPTION scores with patient satisfaction and enablement, but found no significant associations.

DISCUSSION

Our study shows that although patients and doctors generally considered them to be satisfactory, telephone consultations were shorter, presented fewer problems and included less data gathering, counselling and rapport building than traditional face-to-face consultations. These latter differences remained highly significant even when confounders including length of consultation and number of problems were taken into account. Doctors conducting telephone consultations were less likely to have gathered sufficient information to exclude important serious illnesses.

Table 2 Results of Royal College of General Practitioners quality assessment of consultations

Criterion	Prevalence (%)	κ	Rater 1		Rater 2	
			OR	95% CI	OR	95% CI
Patient's contribution encouraged	98	0.92			0.84	0.21 to 8
Is seen to respond to cues that lead to deeper understanding	74	0.72	3.00	0.88 to 19	3.17	1.20 to 12
Obtains sufficient information to include or exclude likely relevant significant conditions	83	0.71	4.82	1.80 to 18	7.50	1.76 to 50
Relevant psychosocial context is clarified by doctor or patient	63	0.80	1.89	0.78 to 6	1.35	0.54 to 4.56
Clinically appropriate working diagnosis is made	94	0.85	1.60	0.49 to 9	1.06	0.27 to 10
Patient's understanding of their problems expressed	84	0.68	1.60	0.66 to 5	1.67	0.62 to 6
Patient's concerns expressed	87	0.79	1.10	0.38 to 4.76	1.42	0.52 to 6
Appropriate management plan is made	97	0.91	7.43	0.90 to 50		
Appropriate explanatory communication	91	0.68	2.06	0.78 to 8	1.69	
Treatments options were discussed	53	0.31*	2.18	1.00 to 6	1.29	0.57 to 3.63
Checks understanding	19	0.57	0.94	0.37 to 3.24	2.36	0.81 to 10
Safety-nets consultation	54	0.21†	1.83	0.83 to 4.93	0.45	0.21 to 1.16
Reaches agreement	99	0.96	1.33	0.16 to 50		

Prevalence represents the proportion of consultations in which the criterion was judged to be present, excluding consultations where it was deemed inappropriate or the rater was unsure. Odds ratios represent comparisons of face-to-face versus telephone consultations.

Empty cells indicate that the OR could not be calculated because of no cases with the criterion absent.

*Non-prevalence-adjusted $\kappa=0.52$.

†Non-prevalence-adjusted $\kappa=0.43$.

Strengths and limitations of the study

This is the first study to directly compare the content of face-to-face and telephone consulting at doctor level. The comparisons were made on real consultations conducted by experienced doctors. Our results show that the OPTION and RIAS systems, already well established in face-to-face analysis, may be reliably applied to telephone consulting, with results similar to previous primary care research^{19 20} and that quality checking based on Royal College of General Practitioners consultation quality parameters has good inter-rater reliability. However, the results from the safety component of this latter assessment should be treated with some caution because it is not known if this predicts adverse clinical outcomes.

Limitations include the fact that doctors who participated in this study were experienced clinicians involved with general practice training so their knowledge of consultation technique may have exceeded that of general practitioners as a whole. In

addition, these general practitioners may have altered their consulting style as a result of observation. Another potential limitation is that it was impossible to blind researchers rating the consultations to the mode of consultation potentially introducing bias. We limited the study to "in-hours" consultations because we felt these would be very different from "out-of-hours" consultations where with reduced staffing it is legitimate to use telephone to triage to identify which problems can be postponed until surgeries are open and which need to be seen sooner. All of the calls in this study, however, were initiated either by doctor or patient in an attempt to resolve the patient's problem by telephone alone.

Considering findings in relation to the wider literature

Our data confirm the difference in duration between face-to-face consultations and telephone consultations observed in previous studies^{3 6 8 11} and suggest this may be partly due to more problems being presented but also due to richer data-gathering, counselling and rapport building in face-to-face transactions. That doctors and patients were equally satisfied with the two modes of consultations despite these differences suggests that they may have different expectations of each consultation mode. This in turn may be due to the nature of the presenting problems in the telephone consultations, which may have been inherently less complex and therefore required less time. Although complexity was not formally assessed, it was the view of those doctors reviewing the consultations that, with some notable exceptions, those problems dealt exclusively by telephone consulting were relatively less complex than face-to-face consultation. Further research in this area is required. An

Table 3 Characteristics of patients whose tapes were analysed and consultations

	Telephone (%)	Face to face (%)	p Value for difference
Female	28 (62)	38 (68)	0.70
Age			
0–5	4 (9)	5 (8)	0.70
6–15	5 (11)	1 (2)	
15–65	27 (57)	41 (70)	
>65	11 (23)	12 (20)	
Total	47	59	

Characteristics of the consultations	Telephone	Face to face	p Value
Length of consultation (min (SD))	4.6 (5.8)	9.7 (4.5)	<0.001
Number of problems physical (%)	50 (94)	70 (88)	0.20
Number of problems psychological (%)	1 (2)	8 (10)	
Number of problems social (%)	2 (4)	2 (2)	
Number of problems discussed			
1	39 (85)	29 (49)	<0.001
2	5 (11)	15 (25)	
3	2 (4)	13 (22)	
4	0 (0)	2 (3)	
Doctor rather than patient initiated (%)	2 (4)	12 (20)	0.039
Main problem new rather than follow-up (%)	31 (70)	27 (48)	0.042

Table 4 Relationship between number of problems and mean (SD) duration of consultation (min)

Number of problems	Telephone	Face to face	Mean duration per problem telephone	Mean duration per problem face to face
1	4.52 (6.16)	9.30 (5.55)	4.52 (6.16)	9.30 (5.55)
2	3.60 (2.15)	9.14 (2.75)	1.80 (1.07)	4.57 (1.38)
3	8.60 (5.09)	10.77 (4.01)	2.87 (1.07)	3.59 (1.34)
4	n/a	11.69 (0.43)	n/a	2.92 (0.10)

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alternative view, however, is that face-to-face consultations may facilitate the development of complexity and/or enable the presentation of multiple problems. This latter explanation resonates with the findings of the only randomised controlled trial of telephone management of acutely presenting problems in general practice⁶ in which additional problems such as health promotion were addressed more frequently face to face. In addition, the tendency for telephone consultation to focus on one problem may explain the observed high rate of reconsultation in the telephone arm of that trial.

Guides to telephone consulting emphasise the importance of compensating for lack of visual cues by increased questioning,^{25 26} and some patients worry about their ability to both describe their symptoms and understand advice over the telephone.²⁷ The finding therefore that information gathering and giving occurs less frequently in telephone consultation is particularly concerning (although this may in part be a reflection of the complexity of the consultation). It may be that the use of algorithms (mainly used out-of-hours) would improve this effect, although this strategy adds significantly to consultation time,²⁸ and studies suggest that experienced clinicians often do not follow them.²⁹ There is evidence, however, that for relatively structured follow-up of long-term conditions, the medium may be effective.^{10 30} Medical educators need to include specific strategies for compensating for the limitations of telephone consulting in their training programmes.

Whereas purely social speech was rare in both forms of consultation, rapport building (eg, encouragement and joking/laughter) was generally much stronger in face-to-face consultations. This may have implications for effective development of long-term relationships, although isolated examples of particularly strong rapport building in telephone consultations in our study suggest this may be amenable to training. In addition, judicious use of telephone consultations could enhance a relationship by supplementing face-to-face consultations.

CONCLUSIONS

Whatever the reasons for the differences between the two different modes of consultation, it is clear that one is not a substitute for the other. Although convenient and satisfactory for both patients and doctors, the current widespread use of telephone consultations for in-hours management of undifferentiated problems may not be the most appropriate and safe use of the medium. However, telephone consultations may be more safely suited to follow-up appointments and care of long-term conditions where an initial assessment and provisional diagnosis have already been made.

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Competing interests None.

Ethical approval Ethical approval was given by Scottish MREC B reference no. 05/MRE10/87.

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