

An evaluation of the Tele-Consultation and Triage system at a primary health centre in Malta

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Abstract

Introduction: The telephone triage and advice service (TTAS) operates within Malta's Primary Health system. The aim of this study is to evaluate the TTAS at Mosta health centre (MHC). Three parameters were studied, namely service usage, patient satisfaction and patient outcome.

Methods: All adult patients who phoned MHC from their home asking for a doctor between February and April 2018 were included. Data was collected from the TTAS sheets available at MHC. A sample of patients was involved in a questionnaire via telephone to assess their experience with the service.

Results: 2,013 patients were included in the study. The mean patient age was 54.85 years (95%CI: 54.04-55.67). There was no significant gender mean age difference ($p=0.813$). Females (67.46%) significantly called more often than males, ($p<0.001$). The majority of calls were from Mosta (24.64%). Most of the patients called asking for advice and their outcome predominantly involved advice over the phone ($p<0.001$). Using the ICPC-2, most complaints were of category A (General/unspecified), the commonest being fever. Advice over the phone (53.5%) was the major outcome. The 80+ age group had a higher house visit percentage outcome (48.58%) compared to the overall population (34.72%). Patients involved in the questionnaire showed an overall satisfaction with this service.

Conclusions: This is the first study evaluating the service in the local setting. Results are promising, showing that TTAS is being used as a means of healthcare provision. A structured approach for doctors taking calls is recommended for more consistent outcomes.

Keywords

primary care, triage, telephone interview, house calls, consultation.

Introduction

Background

The telephone triage and advice service keeps gaining popularity worldwide¹ and many countries are adopting this care plan.² In Malta, this service operates within the primary health department. Despite the fact that many citizens use it, this area of research remains an uncharted territory. Mosta health centre (MHC) is one of three main governmental health centres in Malta, covering the Northern area of the country. It is the only centre providing a 24/7 radiography service. Therefore, it is of no surprise that tele-consultation is regularly

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sought for by patients.

Aim

This study pertains to a pressing issue. Various articles in other countries have assessed the value of this service in primary care, with multiple conflicting results.¹ The aim of this study was to evaluate three important factors associated with telephone triaging, including:

- 1) An overview of service usage
- 2) The effect of this service on patient safety
- 3) Patient satisfaction

Method

Study design

The design of this study was structured in two parts.

The first part consisted of a cross-sectional study where adults who phoned MHC asking for a doctor from 1st February to 30th April 2018, were included. Data was collected retrospectively from the data collection sheet available at MHC which included: patients' age, gender, locality, month and time of calling. The latter was grouped into different time shifts in accordance with the doctors' shifts, ie. 08:00-12:59, 13:00-16:59, 17:00-19:59 and 20:00-07:59 shifts. Ages were also grouped into: 18-39 years, 40-59 years, 60-79 years and 80 years plus. Other data included the reason for calling, the doctor's degree of training, as well as the outcome of the call. The patients' reasons for calling were grouped into main headings according to the International Classification of Primary Care, Second edition (ICPC-2).³ Outcome of the call involved one of the following three: a) advice over the phone, b) advice to refer – to primary care or emergency, and c) house visit.

For the second part of the study, a 10% sample of the population was taken. The subjects in this sample were chosen by stratified random sampling (according to outcome of the call) to participate in a telephone questionnaire. Four questions assessed different aspects of the patients' experience with the service. For availability of the questionnaire the corresponding author can be contacted via email provided.

For patients who took part in the questionnaire it was assessed whether they visited any health care services within two weeks following their call to MHC. This was done using iSoft Clinical manager. Data input and analysis was carried out using

Microsoft Excel. A flow diagram (see Appendix 1) outlines the structure of the study.

Exclusion criteria

Patients below the age of 18 were excluded, as well as calls coming from institutions. Patients whose demographic details could not be fully retrieved were also excluded.

Study approval and Data protection

This study was approved by the Department of Primary Health, Malta and by the Departmental Data Protection officer. Ethics approval was obtained from the Research Ethics Committee of the University of Malta.

Statistical tests

The two-tailed T test was used to compare the mean male and female ages. Chi-squared test was used for categorical data. A significance level of 0.05% was maintained.

Results

A total of 4225 telephone calls were registered in MHC during the study period. After excluding the calls mentioned, the total number of subjects included was 2013.

Demographics

The overall mean age of subjects was 54.85 years (95% CI: 54.035-55.669), median 56 years and mode 45 years. The female mean age was 54.78 years (95% CI: 53.826-55.736) whilst that of males was 55 years (95% CI: 53.451-56.549). There was no significant difference between the gender mean ages ($p=0.813$). Females significantly called more often than males in all age groups (see Figure 1) ($p<0.001$).

As expected most calls came from people living in the North catchment area ($p<0.001$); most came from Mosta ($n=496$, 24.9%) and Birkirkara ($n=368$, 18.5%). Subjects from Mosta significantly called more frequently than other localities in all time shifts ($p<0.001$).

Calls reached their peak during the doctors' night shift. However, if one were to assess the standardised ratio of calls per time shift calculated as a fraction from a 24-hour day, the busiest shifts were the 08:00-12:59 followed by the 17:00-19:59 shift (see Figure 2). When considering monthly variation in calls there was a significant rise in March ($p<0.001$).

Figure 1: Males vs Female who called across different age groups

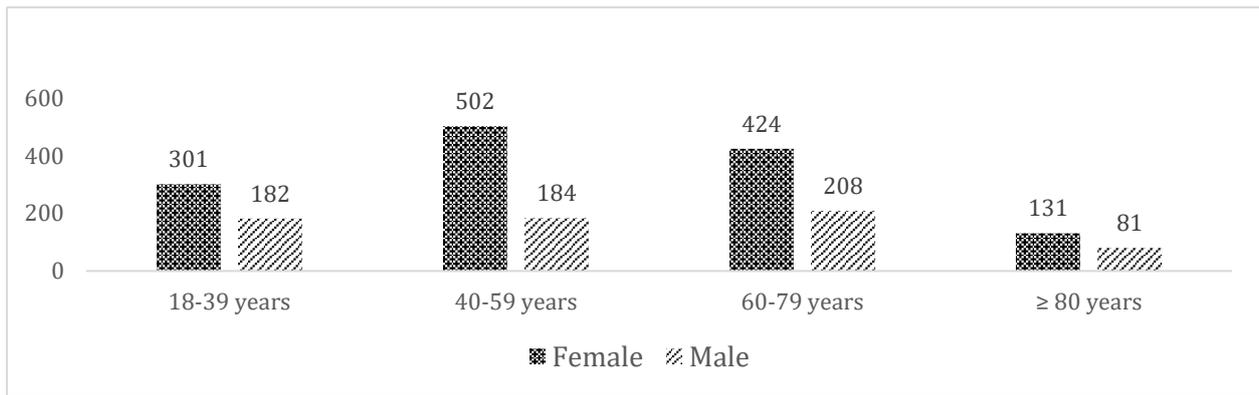


Figure 2: The number of patients who called per shift and the calculated standardised ratio of patients calling in each shift expressed as a fraction of a 24-hour day

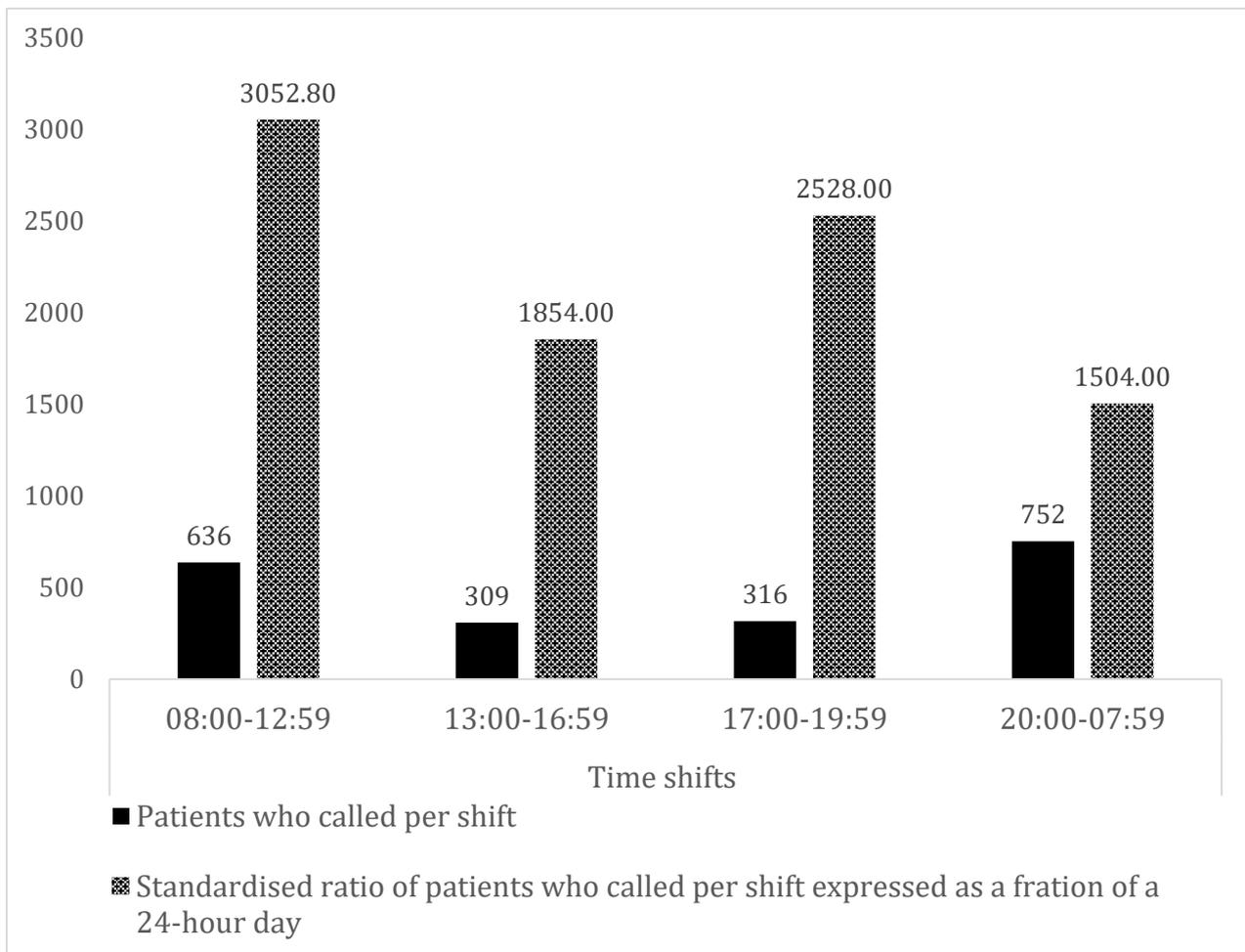


Table 1: Top four call requests per Month classified according to ICPC-2 classification system.

February	March	April
Other (n=344)	Other (n=440)	Other (n=388)
R: Respiratory (n=89)	A: General (n=82)	A: General (n=81)
A: General (n=63)	R: Respiratory (n=79)	D: Digestive (n=73)
D: Digestive (n=56)	D: Digestive (n=70)	R: Respiratory (n=54)

Figure 3: Outcome of calls

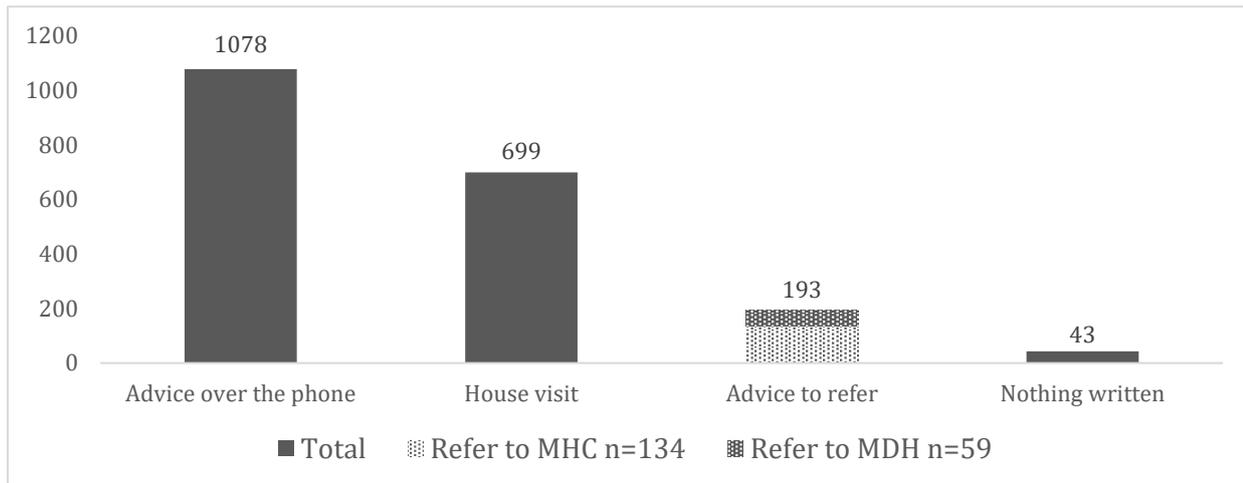


Table 2: Outcome of calls vs other variables. This table compares the outcome of the calls (ie. Advice vs House visit vs Referral vs Nothing written) for each categorical variable seen in the second column.

		Advice %	House visit %	Referral %	Nothing written %	p value
Time shifts	08:00-12:59	39.9	49.8	9.3	0.9	3.823
	13:00-16:59	54.4	31.7	11	2.9	3.101
	17:00-19:59	63.9	20.3	12.7	3.2	2.493
	20:00-07:59	60.4	29.3	8	2.4	2.841
Age	18-39 years	53.2	33.1	12	1.7	6.890
	40-59 years	60.2	31.2	7.1	1.5	9.378
	60-79 years	54.4	35.1	8.4	2.1	1.123
	80 or above	30.2	48.6	15.6	5.7	9.645
Reason for calling	A: General	8.4	72.6	15	4	6.643
	D: Digestive	14.6	73.4	9	3	1.063
	K:	2.5	37.5	57.5	2.5	7.203
	Circulatory/Cardiovascular	8.2	87.8	4.1	0	6.159
	L: Musculoskeletal	13.4	71.6	13.4	1.5	9.806
	N: Neurological	26.3	68.4	0	5.3	0.031
	P: Psychological	10.4	76.1	13.1	0.5	5.804
	R: Respiratory	0	80	20	0	0.085
	S: Skin	84.2	7.3	6.4	0	<0.001
	Other					

Reasons for calling

Out of 2013 subjects, 841 (41.8%) were categorised using the ICPC-2 classification whilst 1172 (58.2%) had requests which did not fit in with any ICPC-2 heading and were classified as 'Other'. Most of the latter ($n=1000$, 85.3%) phoned requiring advice without specifying the reason for calling, making this the commonest complaint in the study. The second commonest call fitted the A:General/unspecified category ($n=226$) of which the majority complained of fever ($n=100$, 44.2%). Some month to month variation was present. Table 1 illustrates the top four presentations according to month.

Doctors taking the call

General practitioners received the majority of calls ($n=1568$, 77.9%); followed by GP trainees ($n=400$, 19.9%) and Principal GP's ($n=14$, 0.7%) whilst the remaining had no data available.

Outcome of the call

The commonest outcome was advice over the phone ($n=1078$, 53.6%), followed by house visit ($n=699$, 34.7%) and advice to refer ($n=193$ calls, 9.6%) ($p=4.101$). From the latter, the majority were advised to go to the health centre. Figure 3 summarises these results.

Table 2 illustrates the outcome of the calls in association with other variables. Of note the reason for calling category 'Other' was significantly associated with an outcome of advice over the phone ($p<0.001$). Calls related to psychological issues significantly led to house visits ($p=0.031$). The 80+ age group had a higher percentage of house visits compared to the other age groups ($p=9.645$).

The questionnaire

A total of 195 patients were asked to participate in the questionnaire, 131 of whom completed it. Most questionnaires (45%) were completed by patients in the 60-79 years age group. The average female score (4.393 CI 4.290-4.496) was slightly lower than that of males (4.438 CI 4.291-4.584) ($p=0.988$). In both genders the average score was lowest in those who were referred to primary care. The average score given by the 18-39 age group was less than the rest ($p=0.989$).

Question 1.

When asked about the doctor's understanding during the call, the average score was 4.412 out of 5 (CI= 4.3248-4.575, median 5, mode 5). Patients who commented in this part of the questionnaire were mostly positive, such as:

- Patient no. 60 (female): "*The doctor was a good listener and seemed to understand my needs.*"

Question 2.

The average patients' score about the time provided during the call was 4.267 (CI 4.084-4.450, median 5, mode 5). Reflecting the slightly lower mean, two patients commented negatively:

- Patient no. 4 (female): "*I felt rushed...*".
- Patient no. 20 (male): "*Sometimes doctors ask direct questions to see if you need a visit or not*".

Question 3.

The average score on the usefulness of the call was 4.427 (CI 4.256-4.6, median 5, mode 5). Patients who commented here were:

- Patient no. 7 (female): "*The call was very useful during the night hours when my doctor wasn't available*"
- Patient no. 24 (female): "*I avoided the need to go to MHC.*"
- Patient no. 90 (female): "*It was not useful because I still had to go to MHC when I wanted a house visit.*"

Question 4.

The mean score for overall satisfaction was 4.504 (CI 4.324-4.684, median 5, mode 5). Patients generally praised the system.

Other common comments were:

- Patient no. 46 (female): "*Sometimes it takes long to reach a doctor via telephone*"
- Patient no. 91 (male): "*I wish there was a way to give results via telephone by some coding system.*"

Patient visits after the call

Table 3 summarises the findings. Each row represents a different outcome category that resulted from the call ie, referral to A&E or MHC, House visit arranged, or Advice given over the phone. The columns represent what happened to the patients in the two weeks following the call. None of those referred to emergency remained at home.

One fourth of those advised to go to MHC had no documentation of any health visit, whilst 16.7% went to hospital emergency department instead. Of those who had a house visit done, 36.6% still presented to a health care premises. From those given advice, 71.6% required no further reviews.

Discussion

This was the first ever study to review tele-consultation and house visits in primary health care. This therefore contributes to further understanding of the subject and should expand its knowledge base.

Demographics

The mean age of presentation, 54.85 years, differs from the quoted mean age of patients going to MHC (46 years)⁴ however, the latter study involved children as well. Our results indicate that the service is being used by all age groups. What is surprising is that patients in the 80 years+ age group called the least. Lack of knowledge about this service and the exclusion of elderly homes are possible reasons. In addition, patients above 75 years are entitled to a special card to decrease waiting times at their local health centre, an incentive which might be encouraging them to attend MHC in person. The significant female majority in this evaluation reflects the female dominance that is repeatedly observed in primary care.⁵⁻⁶

Although the least busy, a substantial number of calls came during the night shift. Patients might find it less convenient to come to MHC during the night whilst others might have problems accessing their private GP. Since MHC has imaging at night, it might also attract calls from patients outside the North concerned about injuries.

Reasons for calling and outcome of the call

The reasons for calling are compared to those in a study conducted in Norway⁷ on nurse-led telephone triaging and also to studies on GP face-to-face consultations in MHC last year⁸ and in 2012.⁴ Of note, certain ICPC-2 categories kept their popularity in the top 4 presentations (see table 4). Interestingly Musculoskeletal complaints were less frequent in the present study. A contributing factor might be that many patients who called for 'Advice' might have required advice on musculoskeletal issues which were not recorded.

Although not statistically significance, GP's were more likely to organise a house visit than trainees possibly because trainees were more keen to follow the local guidelines on triaging calls.¹⁰

'Advice over the phone' was consistently the commonest outcome and most resulted from patients requiring advice. The overall percentage of advice was similar in Denmark (56.5%).⁹ Table 5 compares the outcome for specific complaints in our study with those in Denmark.⁹ Patients in Malta were given much less advice and referral to MHC but were more likely to get a house visit for most complaints. The possibility of a house visit in Malta did not decrease emergency referrals when compared to Denmark. Unfortunately, various important data (such as reason for advice or being bed bound), were not inputted. This could have helped assess why many trivial complaints were managed with house visits. The local rate of emergency referral was high in the case of chest pain, reflecting the current local guidelines on telephone triaging.¹⁰

Table 3: Presentation of patients to health care services in the two weeks following their call, stratified by outcome of the call.

	A&E only within 2 weeks		MHC only within 2 weeks		A&E+MHC within 2 weeks		None within 2 weeks	
	n	%	n	%	n	%	n	%
Referred MDH	3	75	1	25	0	0	0	0
Referred MHC	2	16.7	5	41.7	2	16.7	3	25
House visit	6	14.6	5	12.2	4	9.8	26	63.4
Advice over phone	6	8.1	12	16.2	3	4.1	53	71.6

Table 4: The top four ICPC-2 categories of patient presentation in different studies.

Present study	Malta 2012	Malta 2017	Norway 2017
A: General R: Respiratory D: Digestive N: Neurological	L: Musculoskeletal A: General R: Respiratory K: Circulatory/Cardiovascular	R: Respiratory L: Musculoskeletal A: General B: Blood/ Immune	A: General L: Musculoskeletal D: Digestive S: Skin

Table 5: Outcome of the call for various complaints in Denmark vs Malta.

Reason for calling	Outcome							
	Advice of phone		Referral to MHC		Referral to A&E		House visit	
	Denmark (%)	Malta (%)	Denmark (%)	Malta (%)	Denmark (%)	Malta (%)	Denmark (N/A)	Malta (%)
Fever	43.6	9.5	55.1	7.4	0.9	0	N/A	83.2
URTI/throat symptoms	30.2	11	38.8	6.7	1	0	N/A	82.3
Abdominal Pain	41.3	11.1	56.1	7.4	2.6	3.7	N/A	77.8
Gastritis	56.9	9.4	41.3	7.2	1.9	2.1	N/A	81.3
Chest pain	30.4	0	40.2	25	29.4	58.3	N/A	16.7
Headache	59	20	38.9	20	2.1	6.7	N/A	53.3
Diarrhoea	75.6	28	34.4	4	0	0	N/A	68

House visits were more likely to be done in the 08:00-12:59 time shift. This may reflect a practice where during shifts with additional available doctors, more house visits are accepted compared to shifts with less doctors when house visits are reserved for those who really need it. Taking into consideration that house visits are increasing considerably, last year amounting to 23,612 in Malta, this study gives new light that can help evaluate and manage the rise in requests for house visits.

The questionnaire

The high scores obtained in this questionnaire reflect those in other studies.^{5,11,12} Although encouraging, responder bias might have affected this result. Having a larger number of patients could have yielded clearer results. Similar to the Esteem trial⁵ older patients reported better scores.

Though the average score was high for all questions, question 2 scored the lowest. A study by McKinstry et al., found that patients' concerns and expectations are less often elicited via telephone¹³ and this raises concerns at a time when patient-centred care is encouraged.

Patients' subsequent visits

▪ Patient safety

The system can be viewed as safe when considering those referred to casualty; all patients who went to emergency required admission. Similarly the majority of patients given advice did not require any further reviews. This differs from those referred to MHC (see Table 3). Since this part of the study concerned patients who completed the questionnaire, any deaths during the two-week follow up could not be identified.

▪ Service usage

In previous studies on telephone triage services there was always the uncertainty on whether such studies were reducing GP workload or whether they were just postponing consultations. The ESTEEM trial found a rise in primary care contacts following the call.⁵ The study by Jiwa et al, reported a 39% decrease in GP visits¹² while the study by McKinstry et al, showed a significant reduction in immediate visits with an increase in return consultations.¹³ In the present evaluation it can be appreciated that a substantial percentage of patients presented to A&E and MHC when they were advised otherwise.

Strengths and limitations

This is a large evaluation from a health centre covering a third of the Maltese population. It is the first study in Malta to assess the telephone triaging services in primary care. The use of statistical tests and sampling methods are other qualities which give strength to this evaluation. The questionnaire involved a qualitative analysis with attention to patient satisfaction; evaluation of their answers and comments should be an incentive for further thorough appraisals in primary care.

A foreseen limitation is the lack of objective instruments validated to assess the service. The patients completing the questionnaire were mostly above 60 years of age. Contacting them using other forms of media might have yielded a wider response. The possibility of response bias has been mentioned as a potential contributor to good scores. Recall bias was minimized by calling patients within a few weeks of their call. In addition children and the elderly living in care homes formed a large part of the population at start and their inclusion might have influenced our results.

Conclusion

This evaluation proves that the telephone triage and advice service is being used locally with good patient satisfaction. Caution still needs to be taken to ensure guideline adherence and consistent outcomes. There needs to be better documentation of patient calls; the introduction of a digital system would be ideal. In conclusion this study sheds light on the local situation of telephone triage in primary care and should encourage further research in the other health centres in order to obtain a comprehensive picture on the subject.

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Appendix 1: Flow Diagram of patients involved in the study.

