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Are pharmacy-based minor ailment schemes a substitute for other service providers?

A systematic review

Abstract

Background
Pharmacy-based minor ailment schemes (PMASs) have been introduced throughout the UK to reduce the burden of minor ailments on high-cost settings, including general practice and emergency departments.

Aim
This study aimed to explore the effect of PMASs on patient health- and cost-related outcomes; and their impact on general practices.

Design and setting
Community pharmacy-based systematic review.

Method
Standard systematic review methods were used, including searches of electronic databases, and grey literature from 2001 to 2011, imposing no restrictions on language or study design. Reporting was conducted in the form recommended in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and checklist.

Results
Thirty-one evaluations were included from 3308 titles identified. Reconsultation rates in general practice, following an index consultation with a PMAS, ranged from 2.4% to 23.4%. The proportion of patients reporting complete resolution of symptoms after an index PMAS consultation ranged from 68% to 94%. No study included a full economic evaluation. The mean cost per PMAS consultation ranged from £1.44 to £15.90. The total number of consultations and prescribing for minor ailments at general practices often declined following the introduction of PMAS.

Conclusion
Low reconsultation and high symptom-resolution rates suggest that minor ailments are being dealt with appropriately by PMASs. PMAS consultations are less expensive than consultations with GPs. The extent to which these schemes shift demand for management of minor ailments away from high-cost settings has not been fully determined. This evidence suggests that PMASs provide a suitable alternative to general practice consultations. Evidence from economic evaluations is needed to inform the future delivery of PMASs.

Keywords
community pharmacy services; general practice; pharmacy; primary health care; self care.

INTRODUCTION

Minor ailments are defined as 'common or self-limiting or uncomplicated conditions which can be diagnosed and managed without medical intervention'.[1–5] Up to 18% of general practice workload is estimated to relate to minor ailments, at a cost of £2 billion annually.[6] Similarly, 8% of emergency department consultations involve consultations each year for minor ailments,[7] costing the NHS £136 million annually. Research shows that GPs are in favour of diverting the care of minor ailments to other areas of primary care, including community pharmacists.[8,9] By reducing the time spent by GPs on managing minor ailments, it would enable them to focus on more complex cases and could reduce patient waiting times.[6,8]

In the UK, pharmacy-based minor ailment schemes (PMASs) provide public access to NHS treatment and/or advice via a pharmacist or pharmacy personnel, or, where appropriate, to onward referral to other health professionals.[10] These schemes were originally proposed by the UK health departments as part of their long-term strategy to encourage patient self-care and utilisation of pharmacies as the first port of call for minor ailments where professional support was required.[11,12] The schemes were introduced nationally in all community pharmacies in Scotland and Northern Ireland in 2006 and 2009, respectively.[13,14] The Welsh Government will roll out the service nationwide by 2013.[15] In England, PMASs are specified as 'enhanced' services within the community pharmacy contract, which can be commissioned by the primary care trusts (PCTs) after assessment of local needs.[16]

A systematic review was conducted to explore the effect of PMASs on patient health and cost-related outcomes. This systematic review also aimed to quantify the extent to which existing PMASs have achieved the aim of shifting demand from high-cost services.

METHOD

Standard systematic review methods were used. The protocol was registered with PROSPERO, the international prospective register of systematic reviews.[17]

Data sources and search strategies

The following electronic databases were searched: MEDLINE®, Embase, CINAHL®, International Pharmaceutical Abstracts (IPA), National electronic Library for Medicines (NeLM), Cochrane Database of Systematic Reviews (CDSR), and Centre for Review and Dissemination (CRD), from 2001 to 2011. Supplementary methods included: web-based Google and Google Scholar searches, SCOPUS database for citation searching, reference lists, manual searching of the *International Journal of Pharmacy Practice* and Royal

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How this fits in

Pharmacy-based minor ailment schemes (PMASs) have been introduced across the UK over the last 10 years. Minor ailment consultations in pharmacy are less costly than general practice consultations and provide favourable health-related outcomes. PMASs may redirect care of minor ailments from general practices as intended. The impact of PMASs on general practice workload is difficult to assess.

Pharmaceutical Conference abstracts, and contacts with 109 PCTs in England, as well as local and national health departments/bodies across UK, expert (n = 59) contacts, and a notice in the *Pharmaceutical Journal*.

Inclusion criteria

Types of studies (design, publication status, language). No restrictions were imposed on study design, country of origin, language, or publication status.

Types of interventions and participants. Only community PMASs offering the management of two or more minor ailments were included. (Note: the acronym PMAS is only used for the purpose of this review, and inclusion was not restricted to this terminology). Where comparisons were made with data from general practice management of minor ailments operating in the same area as the PMAS, these were also included. No restrictions were imposed on the age of study participants.

Types of outcome measures. Evaluations that included the following health and cost-related outcomes were sought: resolution or worsening of symptoms; health-related quality of life; reconsultation with other health professionals; referrals; total costs of PMASs; and mean costs of PMAS consultations. Other outcomes considered included the workload and medicines supplied for minor ailments by general practices operating in the same area as PMASs. The comparative analysis of alternative courses of action, in terms of both their costs and consequences, were also considered; for example, the health-related outcomes of general practice consultation for minor ailments. Any other relevant results from any economic evaluations and costing studies identified were included.[18]

Data related to patient and stakeholder perspectives of the schemes were included where they were presented alongside health- or cost-related outcome measures.

Exclusion criteria

Evaluations of minor ailment schemes in non-pharmacy settings were excluded.

Data collection and analyses

Independent, duplicate screening of titles, abstracts, and full texts was performed. Independent, duplicate data extraction of each included evaluation was undertaken, using a standard data-extraction form. Disagreements were resolved through discussion among the authors. The Cochrane tool was used to assess the risk of bias.[19] The results are presented using a narrative approach, and reported in the form recommended in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement and PRISMA checklist.[20]

Assessment of quality and risk of bias

The Critical Appraisal Skills Programme (CASP) tool was used to assess the quality of randomised controlled trials (RCTs).[21] For all other study designs, including service evaluations comprising analyses of routinely collected data, surveys, or qualitative research reports, the Review Body for Interventional Procedures (ReBIP) tool was used.[22] The Drummond and Jefferson checklist was used to evaluate the quality of any economic evaluations or cost analyses.[23]

RESULTS

Screening, selection, and included studies

A total of 3308 titles were screened and 31 evaluations fulfilled the inclusion criteria (Figure 1). Thirty-nine papers were excluded after full text screening, owing to: duplicate publication (n = 15); no health or cost-related outcome data reported (n = 12); commentary or news articles (n = 5); evaluation did not involve a PMAS (n = 5); scheme involved only one minor ailment (n = 1); and published outside the inclusion years (n = 1).

All evaluations were conducted in the UK (England n = 28,[24–51] Scotland n = 2,[52,53] and Wales n = 154) and comprised data from 46 PMASs (Appendix 1: available from the authors).

Only one evaluation was an RCT,[54] which evaluated the impact of a PMAS on triaged calls in one general practice in Gwent, Wales. Six evaluations used a before-and-after design,[26,38,46,47,50,52] mainly evaluating the impact of the scheme on the number of consultations for minor ailments or on the workload (total number of consultations for all illness types, that is, minor and non-minor) of general practices operating in the same area as the schemes. All other evaluations were classified as 'service

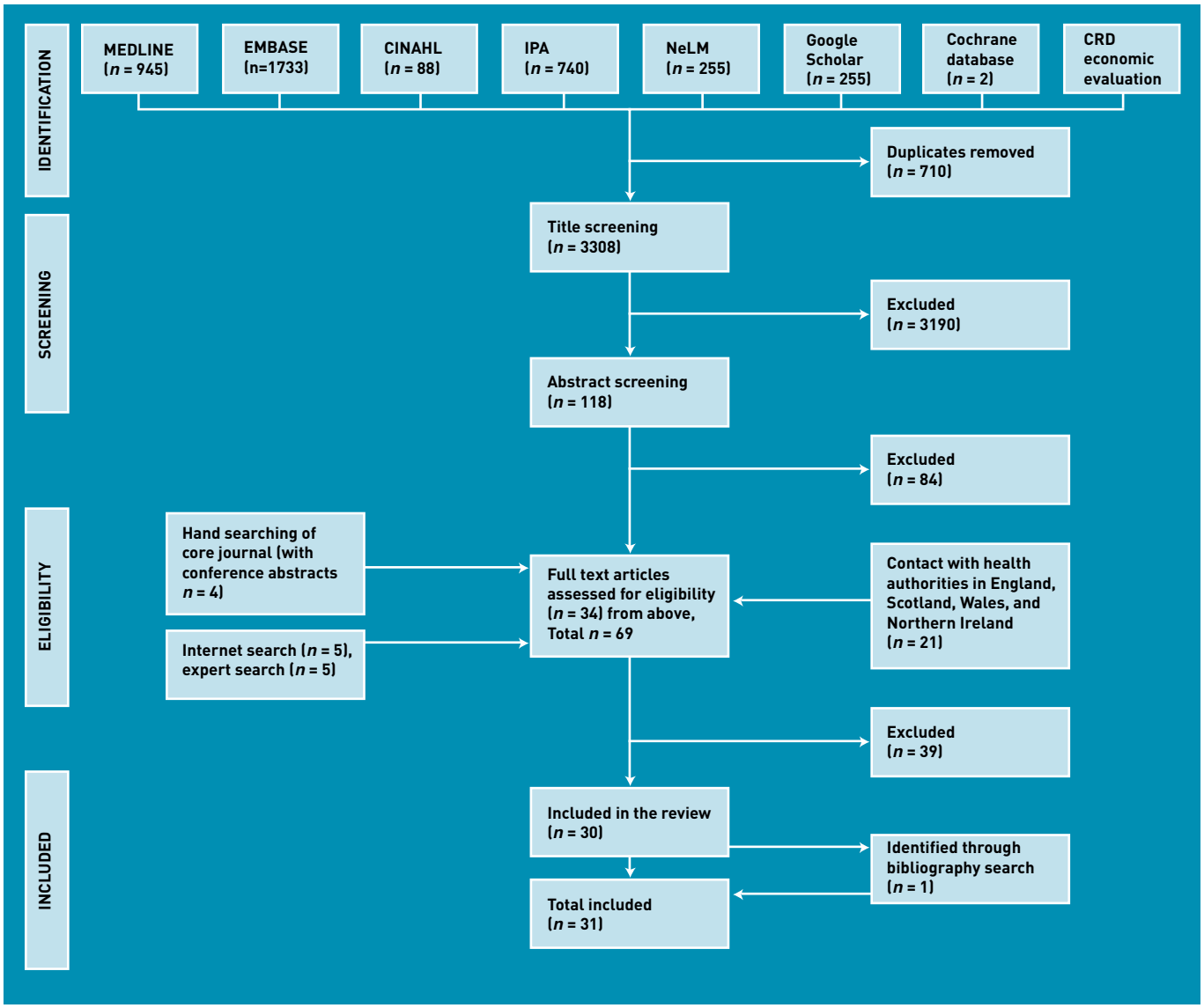

Figure 1. PRISMA flowchart of study-selection process.

evaluations' (*n* = 24).

Quality of reporting and risk of bias

The quality of reporting of the evaluations was often poor. For example, the RCT[54] satisfied only two of 10 CASP quality criteria,[21] with key information such as the process of randomisation and sample size estimation missing (Appendices 2 and 3: available from the authors). The assessment of the risk of bias was often difficult, owing to inadequate information, such as regarding prespecified outcome measures.

Characteristics of minor ailment schemes

Most evaluations (*n* = 24) included schemes with patients who were exempt from prescription charges (that is, in countries in which these charges still exist). Where non-exempt patients could access the service, they were required to pay either a prescription charge or medicine cost, whichever was cheaper.[25,26,33,38,40,45–47,50] A wide range of conditions was included in most schemes (Figure 2).

Health-related outcomes

The proportion of patients reporting resolution of minor ailments following their index consultation ranged between 68% and 94.4% (Table 1). A 10-fold variation (of 2.4%[50] to 23.4%[26]) was observed with reconsultation rates (that is, consultations with GPs following the index consultation). One evaluation compared reconsultation rates with scheme users and non-users.[50] It showed that 2.4% (*n* = 14) and 3.8% (*n* = 36) of index consultations with a PMAS and a GP respectively (Table 1) went on to reconsult a GP.

The types of minor ailments associated with reconsultation or referral to other

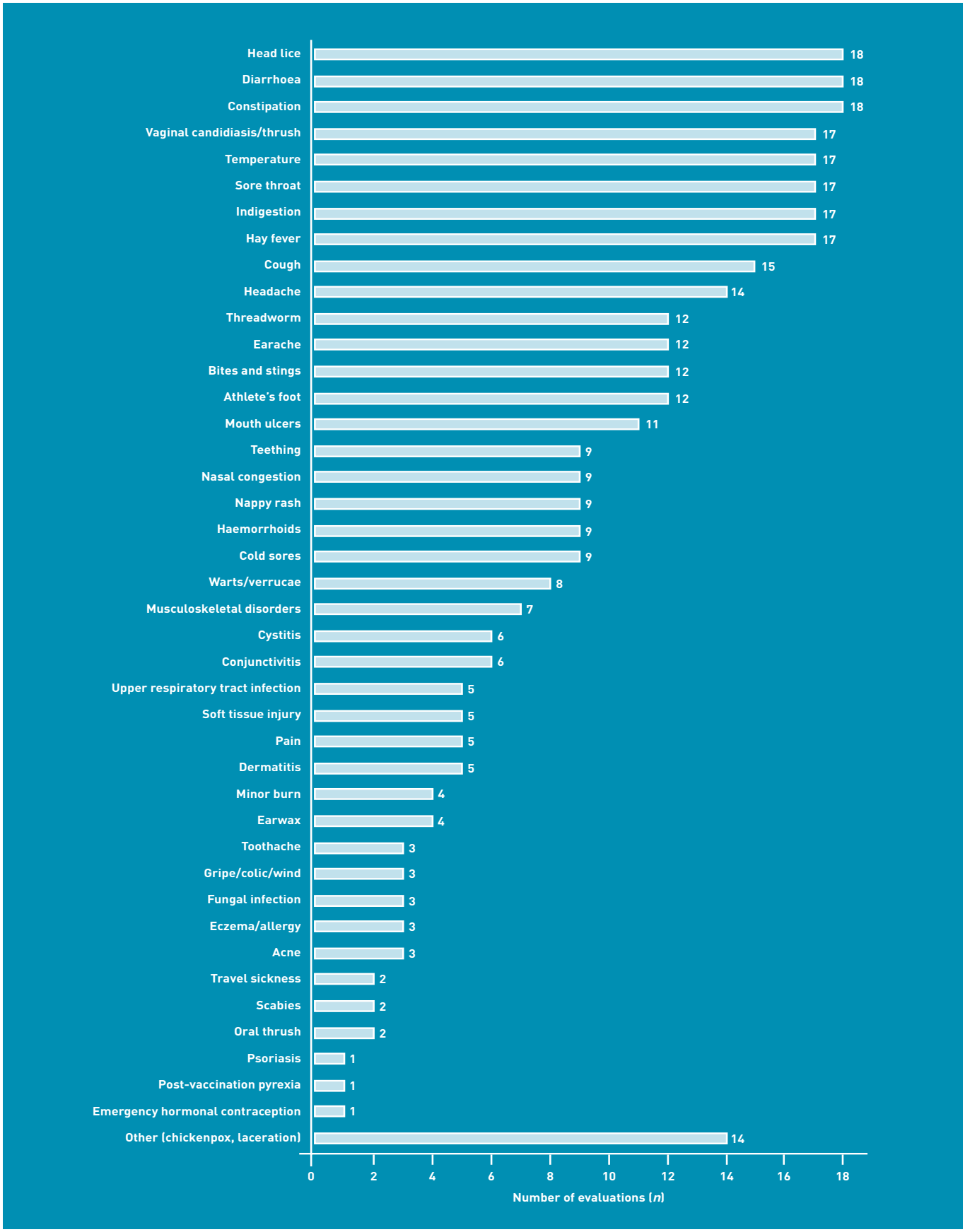

Figure 2. Minor ailments included in the minor ailments schemes.

Table 1. Health-related outcomes of community pharmacy-based minor ailment schemes

Publication	Patients reporting total resolutions of symptom(s) % (*n*)	Reconsultation				Referrals	
		Healthcare professional	Nature of reconsultation	Follow-up duration, days	Reconsultation rate, % (*n*)	Routine referral to GPs, % (*n*)	Urgent referral to GPs, % (*n*)
Whittington *et al*, 2001[50] (scheme users)		Any GP	Same illness Same illness	14 14	5.7 (33) 2.4 (14)	Unclear	3.6 (21)[a]
Whittington *et al*, 2001[50] (general practice users)		Any GP	Same illness Same illness	14 14	4.0[a] (38) 3.8 (36)		
Schafheutle *et al*, 2002[52] (Area 1)	72.3 (47)	Unclear	Same illness	Unclear	6.2 (4)		
Schafheutle *et al*, 2002[52] (Area 2)	68.0 (17)	Any	Same illness	Unclear	8.0 (2)	3.0 (16)	1.0 (5)
Flint and Rivers, 2003[49]						5–30[b] (unclear)	Unclear
Magirr, 2003[48]		GP	Same illness	14	12.0 (6)		
Duggan, 2004[46]						3.4 (167)	Unclear
NHS Islington, 2004[45]		GP	Same illness	14	7.0 (62)	8.0 (70)	Unclear
Parkinson, 2004[44]		GP	Same illness	Unclear	19.0 (unclear)		
Anonymous, 2005[43]		GP	Same illness	14	4.0 (130)	~4.0 (136)	Unclear
Banjo, 2005[42]						Unclear (7)	Unclear
Parkinson, 2005[41]		GP	Unclear	Unclear	11.0 (unclear)	Unclear	Unclear (9)
Proprietary Association of Great Britain and Working in Partnership Programme, 2006[38]		GP	Unclear	Unclear	Unclear (some)		
Gandecha and Butt, 2008[36]						15.0 (6)	Unclear
Gray, 2008[35]	86.0 (133)	Any	Same illness	Unclear	26.7 (unclear)	5.6 (129)	0.4 (10)
Celino and Gray, 2009[34]	94.4 (69)	Any	Same illness	Unclear	4.2 (63)		
Davidson *et al*, 2009[33] (Area 1)						1.0 (69)	Unclear
Davidson *et al*, 2009[33] (Area 2)						0.7 (16)	Unclear
NHS Leeds, 2009[32]		GP	Same illness	Unclear	13.0 (44)		
Mary Seacole Research Centre, 2011[26]		GP GP	Same illness Any illness	14 14	23.4 (34) 34.5 (50)	1.4 (829)	Unclear
Camden Clinical Commissioning Group, 2011[25]						1.1 (114)	0.2 (18)
Pumtong *et al*, 2011[24]						0.4 (unclear)	Unclear

[a]All referrals recorded as 'rapid referrals'. [b]Data through verbal recall by practice staff. Empty cells: no data were available.

health professionals were explored by six evaluations.[26,43–45,48,50] Earache and cough were often associated with referrals and reconsultations in one evaluation.[45] Perceived severity of symptoms[26] and patient dissatisfaction with the perceived shorter length of treatment available through the PMAS[44] were other reasons for reconsultation.

Cost-related outcomes

Most PMASs remunerated participating pharmacies on the basis of a fee per consultation. Where described, fees ranged from £1.50 (price year: 1999/2000)[47,50] to £7.85 (price year: 2009).[31] Pharmacies were reimbursed for the medicinal items supplied.

A large variation in the mean cost of consultations was observed and ranged from £1.44 (price year: 1999/2000)[50] to £15.90 (price year: 2005)[43] (Table 2). The variation was due partly to the methods of cost identification, measurement, and valuation, with only pharmacy-related costs tending to be included, for example, consultation fee (remuneration), costs of medicines supplied (that is, reimbursement).

One evaluation estimated that savings to the NHS would be £112 million (price year: 2008/2009) for England,[31] if all consultations for minor ailments that occur in general practices were undertaken through a PMAS. Such savings were based on the lower mean cost of pharmacy consultations and the assumption that similar health

Table 2. Cost-related data of community pharmacy-based minor ailment schemes

Publication	Price year	Total number of pharmacies involved in the scheme	Total number of scheme consultations	Total cost (£) of the scheme	Cost measures included in total cost computation	Duration of data collection, months	Scheme mean cost per consultation, £	Cost measures included in computation of mean cost per consultation	Mean cost (£) per consultation: other services	
									Service	Cost (£)
Anonymous, 2001[51]	2000/2001	13	Unclear	5424.00	Unclear	Unclear	5.58	Consultation fee and medicines supplied	GP[a]	10.00
Whittington *et al*, 2001[50]	1999/2000	8	576	9152.00	Set-up and running, including administrative, costs	6	1.44 to 1.85[b]	Pharmacists' time only	GP	2.91 to 6.87
Flint and Rivers, 2003[49]	2002	12	3686	12 942.00	Consultation fee and medicines costs	6	3.51	Consultation fee and medicines costs		
Magirr, 2003[48]	2002/2003	35	3073	16 015.00	Consultation fee and medicines costs	14	5.21	Consultation fee and medicines costs		
Duggan, 2004[46]	2002/2003	14	4927[c]	36 669.96	Unclear	16	6.88	Unclear		
NHS Islington, 2004[45]	2004	23	871	Unclear	Unclear	7	8.10	Unclear	GP[a] GP in walk-in clinics[a] Practice nurse[a] NHS Direct[a]	13.00 15.00 7.00 15.00
Parkinson, 2004[44]	2003	5	Unclear	Unclear	Consultation fee and medicines costs	6.10	Unclear	GP[a]	10.42	
Anonymous, 2005[43]	2005	47	3135	49 838.72	Consultation fee, medicines costs, set-up and running administrative costs	6	9.20 to 15.90[d]	Consultation fee, medicines costs		
Banjo, 2005[42]	2004/2005	4	223	1877.99	Consultation fee and medicines costs	6	8.39	Consultation fee and medicines costs		
Parkinson, 2005[41]	2003/2004	17	10 671	73 879.00	Consultation fee and medicines costs	12	6.64	Unclear		
Horgan and McKieran, 2006[40]	2005/2006	6	1046	8412.74	Consultation fee, medicines costs, and material costs (unclear whether set up or running)	12	8.04	Consultation fee, medicines costs, and material costs (unclear whether set up or running)		
NHS City and Hackney, 2006[39]	2005/2006	46	33 494	286 181.09	Consultation fee and medicines costs	12	8.54	Consultation fee and medicines costs		
Black, 2008[37]	2006/2007	102	38 642	228 276.00	Unclear	12	5.90	Unclear	Emergency department[a] Walk-in centre[a] GP[a]	45.00 18.00 15.00
Gandecha and Butt, 2008[36]	2006/2007	19	2675	15 123.00	Consultation fee and medicines costs	14	5.65	Consultation fee and medicines costs	GP[a]	11.50
Gray, 2008[35,e]	2008	14	2296	144 036.00	Consultation fee and medicines costs	12	6.84	Consultation fee and medicines costs	GP[a] Walk-in centres[a] NHS Direct telephone calls[a]	24.00 23.00 25.00
Celino and Gray, 2009[34]	2008/2009	~30	7113	37 000.00	Consultation fee and medicines costs	20	5.20	Consultation fee and medicines costs	Minor ailment schemes in other areas	6.63
NHS Leeds, 2009[32]	2008/2009	54	26 049	136 771.42	Unclear	12	5.25	Unclear		
Sewak, 2009[31]	2008/0909	294	308 199	1 994 261.00	Consultation fee and medicines costs	12	6.50	Consultation fee and medicines costs		
Baqir *et al*, 2010[30]	2010	Unclear	Unclear	4100.00	Unclear	1	Unclear	Unclear	GP[a] Emergency department[a]	36.00 111.00
Petrou, 2010[29]	2008/2009	40	20 408	122 772.91	Unclear	24	6.02	Unclear		
Sim, 2010[28]	2009	185	Unclear	1346.40	Consultation fee	1	3.40	Consultation fee	GP[a] Emergency department[a]	36.00 111.00

... continued

Table 2 continued. Cost-related data of community pharmacy-based minor ailment schemes

Baqir *et al*, 2011[27]	2010	185	Unclear	1346.40	Consultation fee	1	6.03	Consultation fee and medicines costs	GP[a] Emergency department[a] Health visitor	36.00 111.00 11.70
Mary Seacole Research Centre, 2011[26]	2009	65	Unclear	271 961.50	Unclear	12	4.48	Unclear	GP[a]	21.40

[a]Data from reference sources. [b]Based on average scheme consultation length of 3.19 minutes. [c]Total number of consultation data refers to 15 months only. [d]£15.90 with set-up and running administrative costs. [e]Total number of consultation data refers to the total recorded in 6 months from 14 pharmacies, whereas the total cost refers to data from 60 pharmacies collected in 12 months.

outcomes would be achieved regardless of the settings in which the minor ailments were managed.[31]

Impact of PMASs on general practice workload

Six evaluations[38,47,49,50,52,54] measured the impact of the PMAS on the number of consultations for minor ailments in general practices operating in the same area as the scheme. In Merseyside, England,[47,50] the number of GP consultations for minor ailments was significantly lower during the intervention period compared with baseline. However, the total number of GP consultations for all ailments (minor and non-minor) remained unaffected (Table 3). One evaluation reported that the observed decline in the number of consultations for minor ailments at general practices was compensated by the number of minor ailment consultations conducted as part of the pharmacy scheme.[52] The impact of a PMAS on the number of practice nurse consultations for minor ailments was reported by one evaluation,[38] but the low number of consultations in the control and intervention groups limited the interpretation of these findings (Table 3).

The impact of PMASs on the number of medicines supplied by participating general practices for minor ailments (that is, medicines listed in the scheme formulary) was reported in 10 evaluations[24,26,36,38,39,45,46,49,50,52] (Appendix 4: available from the authors), most of which showed a decline in prescribing volume when compared with baseline.[24,26,38,39,45,46,49,52] A reduction in the number of head lice-related prescriptions was the most noticeable.[24,38,45,52] Five evaluations[26,45,46,49,50] reported the impact of the schemes on general practice prescribing costs for minor ailments (Appendix 5: available from the authors), with one evaluation showing a decline of 25%.[49] However, effect sizes and significance levels were not reported and the evaluations lacked control group comparators.

Patient and stakeholder perspectives

Results from 10 evaluations[25,27,28,30–35,52] showed that patients would have used a general practice if no PMAS had been available. Between 47% (patient n = 489)[28] and 92% (patient n = unclear)[31] of scheme users in these evaluations stated this preference. Buying an over-the-counter medicine was the second choice in the absence of a PMAS. Many evaluations included patient[24,26,32,34–36,38,41–45,48–52] and/or stakeholder[24,26,32,34–36,38,40,42–46,48–52] attitudes to, and satisfaction with, the scheme. Most evaluations[26,32,34–36,38,41,42,45,48–50,52] reported that ≥90% or more user responders were willing to reuse the scheme and expressed general satisfaction with their PMAS consultation, pharmacy staff attitude, and expertise of pharmacy staff in minor ailments management and advice provision. The satisfaction of scheme users was comparable with non-users' satisfaction with general practice consultations.[50]

GPs expressed positive attitudes to greater pharmacist participation in the management of minor ailments and the extension of minor ailments included in the schem es.[24,26,32,34–36,38,40,42–46,49–51] Two evaluations reported that although the GP participants' perceived impact on the workload relating to minor ailments was positive, they expressed doubts over whether there was a decline in overall workload, that is, number of daily consultations, following the introduction of a PMAS.[50,52]

Community pharmacists expressed positive attitudes towards PMASs, with extension of their professional role identified as one of the key benefits of the service.[49–52] The workload related to a PMAS was deemed to be accommodated within their routine work.[50,52] Patient misuse of the service was often cited as a barrier to efficient service provision.[24,26,32,34–36,38,40,42–46,48–52]

Table 3. Total number of consultations for minor ailments and all illness types in participating general practices before and after scheme roll out

Publication	Indicator(s)	Total number of consultations during baseline period, *n*	Baseline duration, months	Total number of consultations during scheme period, *n*	Scheme duration, months	Absolute difference Scheme minus baseline, *n*	Difference scheme minus baseline, %	*P*-values
Whittington *et al*, 2001[50]	GP consultations for minor ailments	50[a]	4	36.5[a]	6	–13.5	–27.0	0.001
	All GP consultation types	560[b]	4	552[b]	6	–8	–1.4	Unclear
Schafheutle *et al*, 2002 (Area 1)[52]	GP consultations for minor ailments	970	3	375	3	–595	–61.3	Unclear
	Number of out of hours consultations for minor ailments	46	3	0	3	–46	–100.0	Unclear
Schafheutle *et al*, 2002 (Area 2)[52]	GP consultations for minor ailments	235	3	102	3	–133	–56.6	Unclear
	Number of out of hours consultation for minor ailments	18	3	20	3	2	11.1	Unclear
Flint and Rivers, 2003[49]	GP consultations for minor ailments	Unclear	6	Unclear	6	–500[b]	N/A	Unclear
Walker *et al*, 2003 (control)[54]	GP consultations for minor ailments	N/A	N/A	238	2.5	N/A	N/A	Unclear
	All GP consultation types	Unclear	Unclear	560[a]	Unclear	Unclear	Unclear	Unclear
Walker *et al*, 2003 (intervention)[54]	GP consultations for minor ailments	N/A	N/A	209	2.5	N/A	N/A	Unclear
	All GP consultation types	Unclear	Unclear	504[a]	Unclear	Unclear	Unclear	Unclear
Bojke *et al*, 2004[47]	GP consultations for minor ailments	37[a]	4	29[a]	6	–8[a]	–21.6	0.013
	All GP consultation types	Unclear	4	N/A	6	Unclear	Unclear	0.38
Proprietary Association of Great Britain and Working in Partnership Programme, 2006 (control group)[38]	GP consultations for minor ailments	33	6	37	6	4	12.1	Unclear
	Nurse consultations for minor ailments	2	6	0	6	–2	–100.0	Unclear
	Telephone consultations for minor ailments	0	6	1	6	–1	N/A	Unclear
Proprietary Association of Great Britain and Working in Partnership Programme, 2006 (intervention group)[38]	GP consultations for minor ailments	30	6	37	6	7	23.3	Unclear
	Nurse consultations for minor ailments	1	6	11	6	10	1000.0	Unclear
	Telephone consultations for minor ailments	5	6	3	6	–2	–40.0	Unclear

N/A = not applicable. [a]Values per week, minor ailments as a proportion of total workload decreased from 8.9% in baseline to 6.6% during intervention period. [b]Value per month.

DISCUSSION

Summary

This is the first systematic review of PMASs that assesses their impact on patient outcomes, costs, and general practice workload.

Data on health-related outcomes were mainly derived from surrogate measures such as reconsultation and referral rates; few studies reported data on resolution of symptoms and none measured changes in quality of life. The observed rates of reconsultation and referral suggest that PMASs reduce consultation rates for minor ailments in general practice. Where comparisons were available, reconsultation rates were reported to be similar for patients who presented in pharmacies compared with those who presented in general practice. Because referral to general practices was an option with most schemes, computation of reconsultation rates should ideally have excluded patients who were referred; however, such exclusion was described in only two evaluations.[26,50] The schemes show the potential for

contributing to the enhanced access of patients to GP consultations for non-minor ailments, by freeing up the GP workload for minor ailments. Although there was some evidence that general practice prescribing of some medicines included in scheme formularies declined during periods when schemes were operating,[49] there were insufficient data to determine whether such reductions resulted in a similar increase in pharmacy supply of those medicines.

The mean consultation costs for scheme users in this review were markedly lower than the mean cost of GP (£36.00; price year: 2008/2009) and emergency department consultations (£111.00; price year: 2008/2009).[55]

The impact of PMASs on the number of consultations for minor ailments at general practices was more obvious than the impact on the total workload of general practices. The total number of consultations and prescribing for minor ailments at general practices often declined following the introduction of a PMAS. Long-term evaluations are necessary to differentiate between the transient and real impact of these schemes on general practice workload, with regard to both consultations for minor ailments and all consultation types.

Strengths and limitations

This study was conducted according to the standard methods of undertaking a systematic review,[19,56] and complies with the PRISMA statement.[20] Duplicate screening, selection, data extraction, and quality assessment were undertaken. This minimised errors and bias from the reviewers' perspective. Despite having no restrictions on language or country of origin, no evaluations of PMASs from outside the UK were identified. The lack of international literature indicates that these schemes might be unique to the UK.

No evaluation was excluded based on the risk of bias or quality. As such, the evidence summarised here needs to be interpreted with caution. The risk of bias associated with either patient outcome or cost was often unclear, owing to the inadequate description of methods. In addition, the lack of full economic evaluation limits the strength of the evidence regarding the cost implications of PMASs. Moreover, those studies that attempted to look at cost-related outcomes often did not assess, or assign a cost to, all potentially related items of resource use.

Implications for research and practice

Future research should aim to assess and report patient outcomes, including health status, resolution of symptoms, and health-related quality of life, and include full economic analyses through RCTs or cohort designs. Owing to the limited duration of minor ailments, opportunistic recruitment strategies are recommended. From the UK perspective, future studies should compare outcomes of minor ailments management in settings such as emergency departments, out-of-hours NHS services, and nurse-led minor ailments clinics. Costs from the perspective of both patients and the NHS should be incorporated. Evaluations could focus on specific minor ailments for relevant comparisons of both health- and cost-related outcomes. Future evaluations should: clearly define the services and comparisons made; consider the use of a range of outcome measures of which at least some should be objective (valid and reliable) (see above); include appropriate duration of follow-up to detect important effects on outcomes of interest; provide information on non-responders; and acknowledge and discuss study limitations. Results from high-quality evaluations should be used to inform the strategic direction for the future delivery of PMASs in the UK and beyond.

In terms of practice, funders should endeavour to evaluate existing schemes in regarding effectiveness and cost-effectiveness. The results of the review should provide some reassurance to GPs that patients who seek treatment for their minor ailments via PMASs, are likely to derive benefit from the use of these schemes in terms of symptom resolution and low reconsultation rates. The impact of these schemes on overall GP workload, however, requires further investigation.

Low reconsultation and high symptom-resolution rates suggest that minor ailments are being dealt with appropriately by PMASs. The limited data available from this review suggest that PMAS consultations are less expensive than consultations with GPs. However, those studies that attempted to look at cost-related outcomes often did not assess, or assign a cost to, all potentially related items of resource use. The extent to which these schemes shift demand for minor ailment management away from high-cost settings has not been fully determined. Further economic evaluations are needed to inform the future delivery of PMASs.

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