Beyond Education: Identifying the Active Components of Pharmacist-Led Medication Adherence Interventions in Asthma and Chronic Obstructive Pulmonary Disease

A Narrative Review Using the Information–Motivation–Behavioural Skills Framework

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Abstract

Asthma and chronic obstructive pulmonary disease (COPD) remain among the most prevalent chronic respiratory conditions worldwide, and suboptimal adherence to inhaled and oral therapy is a persistent driver of poor disease control, avoidable exacerbations, and unnecessary healthcare expenditure. Community- and hospital-based pharmacists occupy a unique position to address this problem because of their accessibility, medication expertise, and frequency of patient contact. Over the past two decades, a large and heterogeneous body of trials has tested pharmacist-led adherence interventions in these two conditions, but the interventions themselves are rarely deconstructed into their constituent behaviour-change components, which makes it difficult to know which ingredients are doing the therapeutic work. This narrative review uses the Information–Motivation–Behavioural Skills (IMB) framework as an organising lens to examine pharmacist-led adherence interventions for adults with asthma and/or COPD. Drawing on randomised and cluster-randomised trials, pragmatic service evaluations, and prior systematic reviews identified through a structured search of the literature, we map intervention content onto the three IMB domains, summarise the pattern of clinical and adherence outcomes associated with single- versus multi-domain interventions, describe the instruments used to measure adherence across studies, and identify recurring gaps in theoretical grounding, reporting, and outcome selection. The evidence suggests that interventions addressing behavioural skills, particularly inhaler-technique training with return demonstration, are the most consistent single predictor of improved inhaler use, but that the

largest and most durable gains in adherence and disease control are associated with interventions that combine all three IMB components. Reporting of the theoretical basis for intervention design remains inconsistent, and adherence is measured with a wide range of instruments that limits cross-study comparability. We conclude with recommendations for the design, delivery, and evaluation of future pharmacist-led interventions, and note the further work required to translate this narrative synthesis into a fully registered, PRISMA-compliant systematic review.

Keywords: medication adherence; pharmacist-led intervention; asthma; chronic obstructive pulmonary disease; Information Motivation Behavioural Skills model; inhaler technique; community pharmacy

1. Introduction

1.1 The burden of asthma and COPD

Asthma and COPD together account for a substantial share of the global burden of non-communicable respiratory disease. Asthma affects an estimated 260 million or more people worldwide and is associated with tens of thousands of deaths each year, a large proportion of which are considered avoidable when preventer medication is used correctly and consistently [1]. COPD, meanwhile, remains among the leading causes of death globally, with global-burden-of-disease estimates placing prevalence in the hundreds of millions of cases and attributing several million deaths annually to the condition; projections suggest that the absolute number of people living with COPD will continue to rise over coming decades even where age-standardised rates decline, largely because of population ageing and continued exposure to risk factors such as tobacco smoke and household air pollution [2,3]. Both conditions are managed principally through long-term inhaled therapy, and both are characterised by wide gaps between the adherence levels achieved in clinical trials and those observed in everyday practice [4].

1.2 Medication adherence as the rate-limiting step

Non-adherence to inhaled therapy is not a peripheral problem in respiratory medicine; it is frequently the rate-limiting step that determines whether an otherwise effective medicine regimen translates into better symptom control [4,5]. Reported adherence rates for inhaled corticosteroids and other maintenance therapies in asthma and COPD vary widely across settings, but consistently fall well short of the levels associated with optimal outcomes, and a substantial proportion of patients who do take their medication as prescribed nonetheless use their inhaler device incorrectly, which further blunts the clinical benefit obtained [5,19]. The consequences of poor adherence and poor technique include more frequent exacerbations, greater reliance on rescue medication, higher rates of hospital admission, and reduced quality of life [5,19]. Because non-adherence is common, costly, and at least partially modifiable, it has attracted sustained interest as a target for pharmacist-delivered intervention [17].

1.3 The pharmacist as an adherence-support provider

Pharmacists are the most frequently accessed healthcare professionals for patients on long-term inhaled therapy, given the need for repeat dispensing, and are well placed to check inhaler technique, reinforce disease understanding, identify practical or attitudinal barriers to adherence, and provide an ongoing point of contact between physician visits. Community and

hospital pharmacy-based adherence interventions for asthma and COPD have therefore proliferated over the past two decades, spanning single face-to-face counselling sessions, structured medicines-use-review consultations, multi-visit educational programmes, and technology-supported services incorporating short-message-service reminders or objective inhaler-monitoring devices. What these interventions share is a common aim; what they differ in, often without explicit acknowledgement by the trialists themselves, is the specific behavioural mechanism through which they are intended to work.

1.4 Why a behaviour-change framework is needed

A recurring limitation of the pharmacist-led adherence literature is that interventions are usually reported and evaluated as undifferentiated packages of care rather than as combinations of discrete, theoretically grounded components. This makes it difficult for readers, guideline developers, and future trialists to identify which ingredients of a successful intervention were doing the therapeutic work, and equally difficult to explain why some multi-component interventions succeed while others, superficially similar, do not. The Information–Motivation–Behavioural Skills (IMB) model, originally developed by Fisher and colleagues to explain and promote adherence to antiretroviral therapy, offers a parsimonious framework for this purpose [6]. The model proposes that adherence-relevant information, personal and social motivation to adhere, and the behavioural skills required to translate intention into action are the three proximal determinants of adherence behaviour, with behavioural skills typically acting as the final common pathway through which information and motivation exert their effect [6]. The model has since been validated in other chronic disease populations, including type 2 diabetes [7], and has been used explicitly by at least one prior systematic review and meta-analysis to classify pharmacist-led interventions in asthma and COPD, which found that interventions incorporating all three IMB constructs tended to outperform those addressing only one or two domains [8].

1.5 Aim and objectives

Building on this precedent, the present review uses the IMB framework as an organising structure through which to examine the content, delivery, and effectiveness of pharmacist-led interventions intended to improve medication adherence and related clinical outcomes among adults with asthma and COPD. The aim is to systematically identify, characterise, and evaluate the active components of these interventions using the IMB framework. In pursuit of this aim, the review addresses seven linked objectives: to identify pharmacist-led interventions aimed at

improving medication adherence among adults with asthma and/or COPD; to characterise and map the individual components of these interventions according to the information, motivation, and behavioral-skills domains of the IMB framework; to examine the combinations and patterns of IMB components incorporated into pharmacist-led interventions; to evaluate the effectiveness of interventions and their individual or combined components in improving medication adherence; to assess the association between intervention components and clinical outcomes such as disease control, exacerbations, healthcare utilisation, inhaler technique, and health-related quality of life; to describe and compare the methods and instruments used to measure adherence across studies; and to identify gaps in the design, reporting, theoretical grounding, and evaluation of pharmacist-led interventions, with recommendations for future intervention development.

2. The Information–Motivation–Behavioural Skills Framework

The IMB model conceptualises adherence as the end-product of three interacting constructs [6]. Information refers to a patient's factual understanding of their condition and its treatment, including the rationale for maintenance therapy, the distinction between preventer and reliever medication, and the correct technique for the prescribed device. Motivation is divided into personal motivation, comprising a patient's own attitudes towards and beliefs about the value of adherence, and social motivation, comprising perceived norms and the support (or lack of it) provided by family, peers, and the healthcare team. Behavioural skills encompass both the objective ability to perform the actions required for adherence, such as correct inhaler actuation and coordination, and a patient's perceived self-efficacy to carry these actions out consistently within the routines of daily life [6,7]. A defining feature of the model, and one with direct relevance to intervention design, is that behavioural skills are theorised to mediate much of the effect of information and motivation on adherence behaviour: patients who are well informed and well motivated but who lack the practical skills or self-efficacy to use their device correctly and to integrate dosing into their routine may still fail to adhere [6]. This theoretical structure implies that education alone, however well delivered, is unlikely to be sufficient, and that pharmacist-led interventions confined to verbal or written information provision may systematically underperform interventions that also build motivation and rehearse behavioural skills through demonstration, practice, and feedback [8].

The IMB model has accumulated support across several chronic-disease contexts. Structural equation modelling in adults with type 2 diabetes found that IMB constructs explained a

substantial proportion of the variance in self-reported medication adherence, with behavioural skills again emerging as the dominant proximal predictor [7]. In the respiratory field specifically, a systematic review and meta-analysis of pharmacist-led interventions in asthma and COPD used the IMB model post hoc to classify sixty published trials and reported that interventions engaging all three domains produced larger improvements in adherence and inhalation technique than interventions addressing only information or only behavioural skills in isolation [8]. That review provides an important precedent and partial validation for the approach taken here, while also underscoring the need for a more granular, narrative account of exactly how each IMB domain has been operationalised in pharmacist practice, the purpose to which the remainder of this review is directed.

3. Methods

This article is a narrative, framework-guided review rather than a completed, registered systematic review with meta-analysis. The distinction is stated explicitly because the source document motivating this work was framed in the language of a systematic review, and it is important that readers, examiners, and any journal to which this work is submitted understand precisely what methodological standard has and has not been met at this stage.

The literature underlying this review was identified through structured searches of PubMed/MEDLINE and general biomedical literature databases using combinations of the terms ‘pharmacist’, ‘pharmacy’, ‘medication adherence’, ‘inhaler technique’, ‘asthma’, ‘chronic obstructive pulmonary disease’, and ‘Information-Motivation-Behavioral Skills’, supplemented by backward citation-tracking from a directly relevant prior systematic review and by the reference list supplied with the originating research proposal. Randomised and cluster-randomised trials, trial protocols, and pragmatic service evaluations of pharmacist-led interventions in adults with asthma and/or COPD were prioritised, alongside foundational and validation papers on the IMB model and current international respiratory-disease guidelines and burden-of-disease estimates.

Two methodological steps that are mandatory for a citable systematic review under the PRISMA 2020 reporting standard have not been performed and should be treated as the immediate next stage of this work rather than as completed here: independent dual-reviewer screening of a comprehensive, database-logged search across multiple bibliographic databases with a documented PRISMA flow diagram, and formal risk-of-bias assessment of each included trial using a validated tool [16]. To do so, the authors would need to prospectively

register the review protocol (for example, with PROSPERO) and report the results according to the PRISMA 2020 checklist before the present synthesis could be accurately labelled a systematic review in the technical sense used by Q1 respiratory and pharmacy-practice journals [16]. The classification of intervention content into IMB domains presented in this review was performed by the authors based on the published description of each intervention, following the general approach used in the prior IMB-based meta-analysis discussed above [8], but was not independently duplicated and adjudicated, which is a limitation acknowledged in Section 12.

4. Overview of Pharmacist-Led Interventions Mapped to the IMB Framework

Table 1 summarises a representative set of pharmacist-led trials in asthma and COPD, mapped to the IMB domain(s) that their published description indicates each intervention was designed to address. The set illustrates the range of designs used in this literature, from single-country hospital-based randomised trials to multinational cluster-randomised community-pharmacy trials, and the range of adherence-related outcomes reported.

Study (Author, Year, Country)	**Design / Setting**	**IMB Domain(s) Targeted**	**Principal Adherence-Related Finding**
Wong et al., 2017 (Malaysia)	Cluster RCT; community pharmacy	Information + Behavioral skills	Structured pharmacy management service improved adherence and reduced exacerbation-related contacts versus usual care.
García-Cárdenas et al., 2013 (Spain, AFasma)	Cluster RCT; community pharmacy	All three IMB domains	Odds of achieving controlled asthma were roughly three-fold higher in the intervention arm; adherence and inhaler technique both improved significantly at 6 months.
Manfrin et al., 2017 (Italy, I-MUR)	Cluster RCT; community pharmacy	Information + Motivation	Structured medicines-use-review consultation raised the proportion of patients with well-controlled asthma relative to delayed-training controls.
Teixeira Rodrigues et al., 2021 (Portugal, INSPIRA)	Pilot cluster RCT; community pharmacy	Behavioral skills	Repeated demonstration-and-return-teach training raised the odds of achieving a fully correct inhaler technique.
Abdulsalim et al., 2018 (India)	Open-label RCT; teaching hospital	Information + Motivation + Behavioral skills	Adherence rose from a baseline of 49% to 80% at 24 months in

Study (Author, Year, Country)	Design / Setting	IMB Domain(s) Targeted	Principal Adherence-Related Finding
			the intervention group, with no comparable change in controls.
O'Dwyer et al., 2020 (Ireland)	Cluster RCT; community pharmacy	Behavioural skills (biofeedback)	Objective, device-recorded feedback on inhaler technique and dosing timing improved both adherence and technique scores.
Nguyen et al., 2024 (Vietnam)	RCT; hospital-affiliated pharmacy	Information + Behavioural skills	Pharmacist counselling produced significantly higher adherence scores than usual care at follow-up.

Table 1. Selected pharmacist-led trials in asthma and/or COPD mapped to the Information–Motivation–Behavioural Skills framework.

5. Information-Focused Intervention Components

Almost every pharmacist-led intervention identified in this review contains an information component of some kind, typically comprising verbal counselling on the purpose and mechanism of preventer versus reliever medication, written or printed educational material, and explanation of the relationship between correct device use and symptom control [9,10,12]. Information-only or information-predominant interventions, however, are relatively uncommon in isolation within this literature; more often, information provision is bundled with at least a rudimentary skills-training component, such as a single demonstration of inhaler use. Where trials have attempted to isolate the marginal contribution of information provision, the general pattern reported across the pharmacist-practice literature is that knowledge improves reliably following intervention, but that gains in knowledge do not translate proportionately into gains in adherence or inhaler technique unless reinforced by rehearsal and follow-up [8,17]. This pattern is consistent with the IMB model's prediction that information exerts much of its effect indirectly, through its influence on behavioural skills and motivation, rather than acting as a direct and sufficient cause of adherence behaviour on its own [6,8].

6. Motivation-Focused Intervention Components

Motivation-focused components in the reviewed literature take two broad forms, corresponding to the personal and social motivation sub-constructs of the IMB model [6]. Personal-motivation strategies include exploring a patient's beliefs about the necessity of maintenance therapy relative to their concerns about side effects, addressing specific misconceptions (for example, that inhaled corticosteroids are habit-forming or should be

reserved for symptomatic periods), and using structured medicines-use-review consultations to surface and resolve ambivalence about treatment [14]. Social-motivation strategies are less frequently made explicit but include family-inclusive counselling, peer-support elements in some digital or web-based adherence programmes, and the ongoing, relationship-based contact that a patient's regular community pharmacist can provide across repeat dispensing visits, which several authors have argued functions as an informal but meaningful source of social reinforcement for adherence behaviour [17]. Interventions in this literature that combine motivational interviewing-style consultation with subsequent behavioural-skills reinforcement, such as the Italian medicines-use-review trial and the Spanish AFasma trial, report larger improvements in asthma control than interventions confined to didactic education [13,14], which is again consistent with the IMB model's emphasis on motivation as a necessary but not independently sufficient determinant of adherence [6,8].

7. Behavioral-Skills Intervention Components

Behavioural-skills components are the most consistently reported and most rigorously evaluated element of pharmacist-led interventions in this literature, reflecting both the practical ease of teaching a physical technique within a pharmacy consultation and the ready availability of validated inhaler-technique checklists as an outcome measure [8,15]. The dominant format is demonstration followed by patient return-demonstration, often repeated across two or more visits, sometimes supplemented by written or pictorial device-specific technique guides. A pilot cluster-randomised trial conducted in Portuguese community pharmacies, for example, used repeated demonstration-and-practice training focused specifically on inhalation technique and reported a substantially increased likelihood of patients achieving a fully correct technique score at six months relative to usual care [15]. More technologically sophisticated approaches have used acoustic recording devices attached to the inhaler to provide patients with objective, personalised feedback on both the timing of dosing and the quality of inhalation technique; a cluster-randomised trial of this approach delivered through community pharmacists in Ireland reported improvements in both adherence and inhaler technique that exceeded those typically achieved through demonstration-based training alone, suggesting that objective feedback may strengthen the behavioral-skills component beyond what is achievable through observation-based coaching [11].

Behavioural-skills training in this literature is rarely delivered in complete isolation from information provision, since explaining why correct technique matters is a natural precursor to

teaching it; however, several trials have deliberately weighted their intervention toward skills practice over didactic content, and these tend to report technique-score improvements at least as large as those reported by more information-heavy interventions, while requiring less consultation time [11,15]. This supports the IMB model's characterisation of behavioural skills as the more proximal determinant of correct device use, even though information is what patients and clinicians alike often assume is the primary ingredient of an educational intervention [6,8].

8. Multicomponent Interventions Addressing All Three IMB Domains

The trials in this literature that most explicitly combine all three IMB domains report the largest and most clinically meaningful effects. The Spanish AFasma cluster-randomised trial, for instance, delivered a protocol-based community-pharmacy intervention addressing asthma-control knowledge, personal motivation and beliefs about medicines, and inhaler-technique rehearsal within the same patient contact; at six months, the intervention group had roughly three times the odds of the control group of achieving well-controlled asthma, alongside statistically significant improvements in both adherence and inhaler technique and a clinically meaningful fall in Asthma Control Questionnaire scores [13]. Similarly, a structured, multi-session pharmacist-led programme conducted in an Indian teaching hospital setting for patients with COPD, which combined disease and medication education, motivational counselling around smoking cessation and treatment beliefs, and device-technique training, reported that self-reported adherence rose from roughly half of patients at baseline to four-fifths of patients at twenty-four months in the intervention arm, with no comparable improvement among controls managed under usual care [9]. These findings are broadly consistent with the conclusion reached by the prior IMB-based meta-analysis in this field, that interventions engaging information, motivation, and behavioral skills concurrently outperform single-domain interventions [8], and they extend that conclusion by illustrating the practical form such multicomponent interventions take when delivered by pharmacists in both community and hospital-outpatient settings across a range of health systems, including India, Spain, Italy, Vietnam, Portugal, and Ireland [9,11,12,13,14,15].

It is worth noting, however, that ‘more components’ is not synonymous with ‘more effective’ in a simple additive sense. Several multicomponent trials in this literature achieved statistically significant improvements in short-term, self-reported or pharmacy-refill-based adherence measures that were not sustained when adherence was reassessed using objective prescription-

database data over a longer follow-up period, a pattern reported, for example, in a Norwegian cardiovascular-medicine adherence trial that is instructive by analogy even though it was conducted outside the asthma/COPD population [18]. This divergence between short-term, intervention-proximal outcomes and longer-term, objectively measured outcomes recurs across the wider pharmacist-led adherence literature and is discussed further in the section on measurement below.

9. Clinical and Patient-Reported Outcomes Associated with IMB-Based Intervention Components

Beyond adherence itself, the trials reviewed here report a consistent, though not universal, pattern of secondary benefit across disease control, exacerbation frequency, healthcare utilisation, and health-related quality of life when interventions address behavioural skills alongside information and motivation [8,13]. Improvements in inhaler technique are frequently accompanied by improvements in validated symptom-control instruments such as the Asthma Control Questionnaire and the Asthma Control Test, and several trials report reductions in oral-corticosteroid courses, unscheduled physician contacts, or exacerbation-related healthcare use in intervention relative to control arms [13,14]. Quality-of-life outcomes, most often assessed with instruments such as the St George's Respiratory Questionnaire in COPD populations, show more variable results, with some trials reporting significant between-group differences and others reporting improvement in both arms that narrows the apparent intervention effect [15]. Overall, the strongest and most consistently replicated secondary outcome associated with behavioural-skills-focused intervention content is improvement in objectively scored inhaler technique, while exacerbation and healthcare-utilisation outcomes are reported less consistently and are more sensitive to trial duration and the comprehensiveness of usual care in the comparator arm [8,15,17].

10. Measurement of Adherence Across the Reviewed Literature

A notable source of heterogeneity across this literature is the diversity of instruments used to define and measure medication adherence, which complicates direct comparison of intervention effectiveness across trials [8,17]. Self-report scales, most commonly variants of the Morisky Medication Adherence Scale, are widely used because they are inexpensive and easy to administer within a pharmacy consultation, but are also known to be susceptible to social-desirability bias and to overestimate true adherence relative to objective measures [9,18]. Pharmacy-refill-based measures, principally the medication possession ratio and the related

proportion of days covered, are used in several of the trials reviewed here as an objective, low-cost alternative derived from dispensing records, but these measures cannot confirm that a dispensed medication was actually taken, nor can they capture inhaler technique [18]. A smaller number of trials have used objective, device-based monitoring, such as acoustic recording of inhaler actuation, for example, that can capture both the timing of dosing and the quality of technique simultaneously, and these device-based approaches have generally produced more conservative, and arguably more credible, estimates of true adherence than self-report alone [11]. The inconsistency in adherence measurement across the reviewed trials, several of which use more than one instrument without fully reconciling discrepant results between them, represents one of the principal barriers to quantitative synthesis (meta-analysis) of this literature [8,17] and is a methodological issue that any subsequent formal systematic review on this topic would need to address explicitly, for example through pre-specified rules for handling multiple adherence outcomes within the same study [16].

11. Gaps in the Literature and Recommendations for Future Research

Several recurring gaps emerge from this narrative synthesis. First, explicit theoretical grounding is uncommon: the majority of pharmacist-led adherence trials in asthma and COPD do not state the behaviour-change theory underlying their intervention design, which means that IMB-domain classification, as performed both here and in the prior meta-analysis in this field, is necessarily a post hoc reconstruction by reviewers rather than a category the original trialists intended [8]. Future intervention development would benefit from prospective, theory-driven design, with explicit statement of which IMB (or other behaviour-change) constructs each intervention component is intended to target, ideally reported using an established intervention-description framework [6].

Second, social-motivation components remain comparatively underdeveloped and under-reported relative to personal-motivation and behavioural-skills components; few trials describe deliberate strategies to engage family members, caregivers, or peer networks, despite the theoretical importance the IMB model places on social motivation as a distinct determinant of adherence.

Third, adherence measurement is inconsistent across the field, as discussed above, and objective, device-based measurement remains the exception rather than the rule, which limits confidence in the magnitude of reported effects and in comparisons across trials that rely on different instruments.

Fourth, follow-up duration in many of the reviewed trials is limited to six or twelve months, which is insufficient to establish whether adherence gains achieved through pharmacist-led intervention are sustained once the intensity of pharmacist contact reduces to routine dispensing-level interaction; the divergence between short-term and longer-term adherence outcomes noted in Section 8 underscores this concern.

Fifth, most trials to date have been conducted in single-country, often single-health-system settings [9,10,11,12,13,14,15], and direct replication across differing pharmacy-practice models, funding structures, and scopes of pharmacist practice is limited, which constrains the external validity of conclusions about which IMB-based intervention combinations are most transferable.

Finally, and as noted in Section 3, this body of literature as a whole would benefit from a fully registered, PRISMA 2020-compliant systematic review and meta-analysis with dual-reviewer screening and formal risk-of-bias assessment [16], extending and updating the single prior IMB-based meta-analysis in this field [8] with the substantial number of trials published since its search date, to produce pooled, quantitative estimates of the relative contribution of each IMB domain to adherence and clinical outcomes.

12. Strengths and Limitations of This Review

This review's principal strength lies in its explicit use of a validated behaviour-change framework to organise and interpret a literature that is otherwise reported largely as undifferentiated intervention packages, which allows recurring patterns in what works, and for whom, to be made visible across an otherwise heterogeneous set of trials conducted in different countries, health systems, and pharmacy-practice models. The review also draws together burden-of-disease context, theoretical grounding, empirical trial evidence, and measurement considerations within a single, integrated narrative, which may be of practical use to researchers designing new pharmacist-led interventions or to pharmacy educators structuring adherence-counselling training.

The principal limitation, already flagged in Section 3, is that this is a narrative rather than a formally registered systematic review: the search was not exhaustive across all relevant databases, study selection and IMB-domain classification were not performed independently by two reviewers, no formal risk-of-bias assessment was conducted, and no quantitative pooling of effect sizes was attempted. The trials discussed are illustrative of the range of

intervention approaches and outcomes reported in this field rather than an exhaustive census of every published pharmacist-led adherence trial in asthma and COPD, and publication bias favouring positive trials cannot be excluded. Readers, and particularly doctoral or journal reviewers assessing this work against Q1 systematic-review standards, should treat the synthesis presented here as a structured scoping and theoretical framing exercise that identifies the shape of the evidence and the priority questions for a subsequent, fully executed systematic review, rather than as a substitute for that review.

13. Conclusion

Pharmacist-led interventions can improve medication adherence, inhaler technique, and disease control in adults with asthma and COPD, and the Information–Motivation–Behavioural Skills framework provides a coherent lens through which to understand why some interventions succeed more than others. Across the trials examined in this review, behavioural-skills components, particularly inhaler-technique training delivered through demonstration, supervised practice, and objective feedback, emerge as the most consistent single contributor to improved device use, while the largest and most clinically meaningful gains in adherence and disease control are associated with interventions that deliberately combine information, motivation, and behavioural-skills content within the same programme of pharmacist care. Realising the full potential of this evidence base will require more explicit theoretical grounding in future intervention design, more consistent and, where possible, objective measurement of adherence, longer follow-up to establish durability of effect, and, ultimately, a fully registered and PRISMA-compliant systematic review and meta-analysis capable of quantifying the relative contribution of each IMB domain across the growing number of trials in this field.

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