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Research "push", long term-change, and general practice

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Abstract

Purpose – Intervention evaluations have not always accounted for long-term implementation of interventions. The purpose of this paper is to explore implementation of a primary care intervention during the lifespan of the trial and beyond.
Design/methodology/approach – Eight general practices participated in the trial (four control and four intervention). In-depth interviews (with nine GPs and four practices nurses who delivered the intervention) and observation methods were employed. Thematic analysis was utilized and Normalization Process Theory (NPT) constructs were compared with emergent themes.
Findings – Macro-level policy imperatives shaped practice priorities which resulted in the "whole system" new intervention not being perceived to be sustainable. Continued routinization of the intervention into usual care beyond the lifespan of the funded study was dependent on individualized monitoring and taking forward tacit knowledge.
Research limitations/implications – The authors discuss the implications of these findings for sociological theories of implementation and understanding outcomes of research led complex interventions.
Originality/value – The study describes the complex interplay between macro processes and individual situated practices and contributes to understanding if, how, and why interventions are sustained beyond initial "research push". The value of the study lies in describing the conditions and potential consequences of long-term implementation, which might be translated to other contexts.

Keywords Sustainability, Qualitative research, Organizational change, Implementation, Clinical guidelines, General practice

Paper type Research paper

Background

Increasing attention has been paid to the social processes associated with the uptake of evidence, and in particular, through the notion of complex interventions in health care. The Medical Research Council defines these as "interventions that contain several

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interacting components" (MRC, 2008). Many complex interventions are driven by researchers attempting to implement evidence and such endeavours are described as "research push" (Greenhalgh *et al.*, 2004). A growing empirical and theoretically informed literature explores and debates the issue of implementation. It demonstrates that there are a number of difficulties associated with implementing complex interventions, resulting from multiple cross-cutting factors such as policy context, organizational factors and challenges facing organizational change, professional identities and relationships, dissemination and uptake of knowledge, and individual actions (Pentland and Feldman, 2007; May *et al.*, 2007; Swan *et al.*, 2007; Lourencoa *et al.*, 2011; Kitchener and Mertz, 2012; Glasziou and Haynes, 2005; Greenhalgh *et al.*, 2004). These insights offer a focus on the significance of social structure and the workings of human agency whereby organizational systems are created and recreated by the actors located within them (Pawson, 2006; Callaghan, 2008) and that health care interventions are "affected by past history, present context and the inter-relationships of the individuals (considered as complex systems) with other complex systems" (Byrne, 2013, p. 221). Research to date has tended to focus on the reasons why interventions have not been fully operationalized with less attention paid to the issue of longer term routinization or sustainability (Martin *et al.*, 2011, 2012). A review of the literature is followed by an outline of the exemplar of one intervention, this study's methods, findings, and a discussion of relevance to understanding uptake of new ("research push") interventions.

Investigating implementation

Research literature has detailed why health care professionals have (or have not) engaged with or implemented trials or interventions. This can relate to problems such as; initial uptake related to research participants not seeing the value for their work (Bamford *et al.*, 2012; Sanders *et al.*, 2011; Lloyd *et al.*, 2013; Maxwell *et al.*, 2013; Pope *et al.*, 2013); research sites not actively dividing up work and allocating roles involved with interventions sufficiently (Lloyd *et al.*, 2013; May *et al.*, 2011; Maxwell *et al.*, 2013; Pope *et al.*, 2013); proposed new ways of working not fitting into current individual ways of working or clinical routines (Sanders *et al.*, 2011; May *et al.*, 2011; Bamford *et al.*, 2012; Lloyd *et al.*, 2013; Pope *et al.*, 2013; Finch, 2008; Murray *et al.*, 2011; Marceau *et al.*, 2010); and whether or not existing organizational structures facilitate such processes and fit into how support staff already work (Pope *et al.*, 2013; May *et al.*, 2011; Murray *et al.*, 2011; Elwyn *et al.*, 2008; Atkins *et al.*, 2011). Martin *et al.* (2011, 2012) noted the dearth of literature which empirically explored how or why interventions can be sustained in routine practice long term. Research evidence has since reported the importance of intervention sites measuring and demonstrating impact (Lloyd *et al.*, 2013; Pope *et al.*, 2013) and macro-level issues such as resource constraints and service delivery structures that also impinge implementation of an intervention (Pope *et al.*, 2013; Clarke *et al.*, 2013).

Theoretical approach

Normalization Process Theory (NPT) is a theoretical framework which aims to guide or help evaluate complex interventions and explicitly includes a consideration of routinization. NPT is a mid-range sociological theory predicated on four overarching constructs which detail the collective, coordinated and cooperative social action in order to understand agents at work within implementation processes (Finch and May, 2009). It focuses on the work required to achieve routinization which centre around four overarching dimensions: coherence, that is, the work that defines and organizes the objects of practice; cognitive participation, that is the work that defines and organizes the enrolment of participants in a practice; collective action, that is the work that defines and organizes the enacting of a practice; and reflexive monitoring, that is work that defines and organizes the knowledge upon which appraisal of a practice is founded. NPT's four overarching constructs are further subdivided by four sub-constructs (adapted from May *et al.*, 2010):

1. Coherence:
   - Differentiation: an important element of sense-making work is to understand how a set of practices and their objects are different from each other.
   - Communal specification: sense-making relies on people working together to build a shared understanding of the aims, objectives, and expected benefits of a set of practices.
   - Individual specification: sense-making has an individual component too. Here participants in coherence work need to do things that will help them understand their specific tasks and responsibilities around a set of practices.
   - Internalization: finally, sense-making involves people in work that is about understanding the value, benefits and importance of a set of practices.
2. Cognitive participation:
   - Initiation: when a set of practices is new or modified, a core problem is whether or not key participants are working to drive them forward.
   - Enrolment: participants may need to organize or reorganize themselves and others in order to collectively contribute to the work involved in new practices. This is complex work that may involve rethinking individual and group relationships between people and things.
   - Legitimation: an important component of relational work around participation is the work of ensuring that other participants believe it is right for them to be involved, and that they can make a valid contribution to it.
   - Activation: once it is underway, participants need to collectively define the actions and procedures needed to sustain a practice and to stay involved.
3. Collective action:
   - Interactional workability: this refers to the interactional work that people do with each other, with artefacts, and with other elements of a set of practices, when they seek to operationalize them in everyday settings.
   - Relational integration: this refers to the knowledge work that people do to build accountability and maintain confidence in a set of practices and in each other as they use them.
   - Skill set workability: this refers to the allocation work that underpins the division of labour that is built up around a set of practices as they are operationalized in the real world.

- Contextual integration: this refers to the resource work - managing a set of practices through the allocation of different kinds of resources and the execution of protocols, policies and procedures

(4) Reflexive monitoring:

- Systematization: participants in any set of practices may seek to determine how effective and useful it is for them and for others, and this involves the work of collecting information in a variety of ways.
- Communal appraisal: participants work together – sometimes in formal collaboratives, sometimes in informal groups to evaluate the worth of a set of practices. They may use many different means to do this drawing on a variety of experiential and systematized information.
- Individual appraisal: participants in a new set of practices also work experientially as individuals to appraise its effects on them and the contexts in which they are set. From this work stem actions through which individuals express their personal relationships to new technologies or complex interventions.
- Reconfiguration: appraisal work by individuals or groups may lead to attempts to redefine procedures or modify practices – and even to change the shape of a new technology itself.

In this paper we use the exemplar of an intervention which set out to implement the NICE Osteoarthritis (OA) Guideline in clinical practice. We explore clinicians' experiences and perceptions of the trial and explicate how and why they selectively continued with components of a new model of care beyond the trial's lifespan. We use NPT to contextualize our findings and discuss what may be needed to help understand the long-term routinization of interventions driven by research "push" (Greenhalgh *et al.*, 2004). We conclude with some reflections on the salience of the NPT for understanding long-term routinization and discuss potential problems that may occur because of the selective routinization of particular components of complex interventions.

Methods

The trial intervention

The study featured in this paper is the Management of OsteoArthritis in Consultations (MOSAICS) study. It was devised in the wake of research which indicated that people with OA were not self-managing their condition in accordance with clinical recommendations (Jinks *et al.*, 2007), clinicians may not be advising patients on self-management in accordance with guidelines (Porcheret *et al.*, 2007; Steel *et al.*, 2007), and patients desire more information and self-management support from practitioners (Mann and Gooberman-Hill, 2011). The study aimed to enhance the supported self-management provided to patients and promote the uptake of the core treatments recommended in the NICE OA guidance (National Institute for Health and Care Excellence, 2008) in general practice. Full details of the cluster randomized control trial and intervention can be obtained from the study protocol (Dziedzic *et al.*, 2014), but for context we provide a brief overview below.

The intervention was based on the WISE model, which emphasizes the provision of appropriate information for patients (in the form of a "guidebook"), professionals being responsive to patient need and context, and services that are responsive to patients (Kennedy *et al.*, 2007). The intervention was developed by researchers in close collaboration with primary care clinicians and patients (Porcheret *et al.*, 2013; Grime and Dudley, 2014) and consisted of a semi-structured GP consultation, use of an OA "guidebook", and referral to a nurse-led OA clinic once the GP had diagnosed OA (Figure 1).

Ten potential general practices (GPs), who fulfilled the eligibility criteria (see protocol, Dziedzic *et al.*, 2014), were identified through the English West Midlands North and North West Primary Care Research Networks. The practices were introduced to the trial by the study research team at a "roadshow" meeting where they were given information about the study rationale and an overview of its design, the main research questions, what was required from their teams, potential benefits of participation and details of remuneration for clinical time. An overview of the training program for participating GPs and nurses was presented. Subsequently, eight practices agreed to take part in the study. Two practices declined, one because of competing pressures, and one did not provide a reason.

Four practices were randomly allocated to the control arm and four to the intervention arm of the study. Control practices provided usual care and use of a template and intervention practices provided enhanced care (intervention) and used a template. The template alerted GPs and practice nurses to tasks required for the management of OA and enabled them to complete prompts for information (a pain and function assessment; weight measurement and BMI calculation; provision of information; advice and assessment of paracetamol and topical non-steroidal anti-inflammatory drugs (NSAIDs) use; advice about weight, exercise; physiotherapy referral).

Intervention practice GPs received training on how to deliver the initial consultation for a new or established patient consulting with OA and the procedure for referring to a practice nurse for a follow-up OA consultation (nurse clinic). Practice nurses received training in how to support and enable patients to self-manage OA, using a patient-centred approach, an OA guidebook, goal setting, pain management and the core NICE recommendations – information and advice, strengthening exercise and aerobic fitness training, and weight management. Details of the training content are as follows:

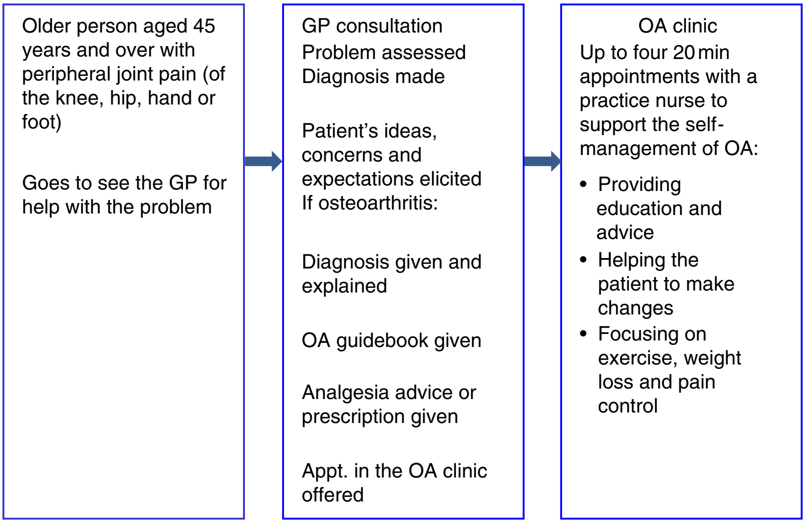

Figure 1.
MOSAICS trial intervention

GP training (with practice nurses present at workshops 1 and 4):

- four practice-based workshops (2 × 3 hours, 1 hour);
- workshop 1: interactive session on how the practice currently manages osteoarthritis (OA), didactic session with questions on OA diagnosis, epidemiology and impact on patients; and on MOSAICS trial intervention;
- workshops 2 and 3: two skills training sessions with rehearsal and feedback on consultation skills with the use of simulated patients, and a question and answer session on OA with a rheumatologist; and
- workshop 4: action planning on delivery of trial intervention in day-to-day practice.

Nurse training:

- attendance at workshop 1 and 4 (as above);
- 4 full days attending workshops held at Keele University;
- day 1 workshops: introduction session; communication in the consultation;
- day 2 workshops: the SMART tool and its use; living with OA (patient perspectives and needs): joint examination and study procedures;
- day 3 workshops: summary and reflection on days 1 and 2; addressing exercise: the why and how (with role play of skills); addressing pain and weight: the why and how (with role play of skills); and
- day 4 workshops: rehearsal of skills with simulated patient: explaining OA and addressing patient goals; exercise demonstration refresher and use of pedometer review; rehearsal of skills with simulated patient and addressing patient goals; wrap up and action planning.

Data collection and analysis

Two approaches to data collection were utilized at this stage of the study: observations and in-depth semi-structured interviews. Nine GPs and four nurses from across the four intervention practices volunteered to take part in individual or small group semi-structured interviews to explore practitioners experiences and opinions (Bowling, 2001) of the intervention, challenges and opportunities encountered, and plans for continued use of the new approach. All interviews were audio-recorded and fully transcribed. Post intervention feed-back meetings took place approximately two to three months after the intervention had finished at each intervention practice. These meetings were observed by A.M. and B.N.O. to illuminate behaviour and interactions in natural settings and identify meaning to people in that setting (Sharkey and Aggergaard Larson, 2005). The purpose of the meetings were to gain feedback about what practices thought of the intervention in terms of positive and negative experiences, what they might do differently in the future and their recommendations for future OA care. Observing these meetings supplemented data obtained from interviews.

Structured observation schedules and interview topic guides were developed using NPT constructs as sensitizing devices. Interview topics included the following: what staff thought of the intervention and their experiences of delivering it; what the practice staff thought about the intervention content and its relevance to their work (coherence); their views on what they were asked to do as individuals and at a practice level, if they were able to undertake their roles and tasks, and if any barriers and facilitators (organizational, inter-professional and individual or patient related) were encountered (cognitive participation and collective action); if they communicated and monitored the effects of the intervention (reflexive monitoring), and if they would be willing or able to continue delivering the intervention's model of care routinely once the intervention ended.

NPT also informed observation schedules and featured prompts for researchers to note how (individually or collectively) HCPs discussed the following in the intervention feedback meetings; their views about the relevance of the intervention (coherence); if roles were clearly defined throughout the intervention (cognitive participation); how well it had fitted into routine practice and any problems encountered (collective action); and discussions of intervention benefits and if, how or why the intervention would be continued with (reflexive monitoring). Non-verbal communication, spatial positioning and other salient features were documented.

Using a theoretical framework confers the possibility of detrimentally imposing constructs onto data collection and analysis (Macfarlane and O'Reilly-de Brun, 2012). By nature, NPT encourages focus on socially situated mechanisms of embedding and normalising new processes within organizations and amongst groups using pre-defined constructs. Mindful of the focus of NPT, data collection remained sufficiently open and exploratory for other issues and themes to emerge. Probing was employed during interviews and other key discussions or issues raised during observations recorded.

Similarly we strove to avoid imposing NPT constructs onto the data and obscuring other issues. All data were analysed using inductive coding, subsequent theme development and constant comparison (Charmaz, 2006). Continuous team analysis of interview and observation materials helped to challenge interpretations and refine coding and themes. Next, we deductively recoded data using the NPT constructs, to allow inductively coded themes that could not be fully accounted for to be explored and accounted for. Following the example of Macfarlane and O'Reilly-de Brun (2012), B.N.O. actively strove to "bracket" out previous knowledge of NPT while coding. Members of the study team less familiar with NPT (A.M., C.J. and K.S.D.) also coded data independently. This helped to challenge interpretations and refine coding and themes. A list of themes identified is included in Table I. Table II details themes mapped to NPT (where appropriate). In some instances themes could fit under two NPT constructs and were coded accordingly. Some themes could not be coded under NPT or were coded but not considered to be fully explained by NPT (we discuss these findings below). The QSR Nvivo 10 software package facilitated data analysis.

Results

In this section we discuss the themes that we identified in the data relating to operationalizing and integrating the intervention into usual ways of working, experiences of delivering the intervention, and strategies to continue using elements of the trialled approach whilst negotiating contextual barriers. Where appropriate we situate themes against NPT constructs and in the discussion we reflect on what may be missed by the NPT and how these issues may be addressed and incorporated theoretically.

Operationalizing the study and managing organizational impact

In the early stage of participation in the trial practitioners were worried about the work of preparing themselves to participate in the intervention. This centred on ensuring normal operations were not disrupted and time was found to give due attention to the

Table I.
List of themes and subthemes related to results subheadings

Results subheading	Themes and subthemes discussed
Operationalizing the study and managing organizational impact	Operationalizing the study
	Timetabling training
	Reconciling study and usual care
	Reconciling training and practice
	Fitting training in
	Managing organizational impact
	Scheduling study clinics
	Balancing staff time and study clinics
	Adjusting schedule to deliver clinics
	Allocating time and space
	Impact of staff turnover on study
	Communicating the intervention to new staff
Positive changes to usual OA care	Increased OA Knowledge and skills
	Valuing new knowledge about OA
	Knowing more about OA
	Structure for managing OA
	Knowledge of OA management
	Understanding treatment options
	Good way to describe OA
	Different attitude and approach
	Being able to discuss OA
	Able to discuss OA positively
	No longer "heart sink" consultations
	More enjoyable consultations
	Actively manage OA consultations
	Encouraging patient responsibility
	Empowering patients
Defining roles and maintaining congruence with usual practice	Defining roles
	Extends role supporting patients
	Enhances current care
	Suits current care philosophy
	Appropriate role in care pathway
	Contributes to OA care package
	Nurse clinic appropriate for OA care
	Maintaining congruence
	Intervention "fits" general practice
	Does not alter consultation format
	Fits within time constraints
	OA knowledge bolsters existing practice
	Similar to other chronic condition clinics
	Helps "close" consultations
	Does not disrupt doctor-patient relations
	Referral frees up GP time
Ambivalence about benefits for patients	Benefits for patients
	Offering more to patients
	Making time to deal with OA patients
	Improved knowledge and patient care
	Patients felt they were given time and attention
	Patient tensions
	Difficult patient expectations and agendas

(*continued*)

Table I.

Results subheading	Themes and subthemes discussed
Individual monitoring and long-term implementation	Demotivated patients Unreceptive patients Adding burdens to patients Deciding what is workable Discussions with colleagues about intervention Integrating the template structure into consultations Continuation with the guidebook Working well with "normal" practice Selecting skills to use long term Barriers to implementation Lack authority to decide (nurses) Does not meet policy agendas Not economically viable Needs to be incentivized Does not fit practice priorities

study. GPs from all practices described how one of the biggest overall challenges was fitting attendance at training sessions around routine practice. First, they detailed how difficult it had been to accommodate on-site training various workshops that were arranged (see details of HCP training content). Second, they outlined the difficulties of juggling their normal nurse clinic timetabling so that nurses could attend training (which was mostly off-site):

> Time […] I think for the nurses […] obviously I think they needed to spend a bit more time (doing training) […] obviously training the doctors on site saved time, whereas the nurses have to go off site so I think for them that was a little bit more difficult but I think they were given time for that (GP7).

However, all GPs suggested that their practice managers and administrative staff had managed to work around these constraints and reschedule resources accordingly and the times and dates of the GP training were negotiated with each practice to fit round their schedules.

For the GPs one of the key potential problems with participating in the study related to ensuring that time and staff were not diverted from their routine work:

> It was positive and that there weren't any major problems with capacity, this time's all extra nurse time I think anyway, the full range of other clinics are still going on (GP3).

The GP quoted above felt that her large well-resourced (in terms of staffing levels) practice was able to ensure that other clinics were catered for. GPs at a smaller practice did suggest that taking part in the study was problematic because "it's taken away time, nursing time" from other clinical areas that GPs thought were important to focus on, despite receiving remuneration for the time given over.

This concern was arguably influenced by the relative size of practices, with larger practices suggesting they had more capacity to accommodate these issues, and the will of practices to utilize the remuneration received to arrange for cover. One larger practice did encounter difficulties with enrolling and allocating work during the study. The study team noted that referral rates to nurse clinics in the practice were relatively

Table II. List of themes mapped to NPT constructs

Results heading	Themes coded under coherence	Themes coded under cognitive participation	Themes coded under collective action	Themes coded under reflexive monitoring	Themes not accounted for by NPT
Operationalizing the study and managing organizational impact		Operationalizing the study Timetabling training Reconciling study and usual care Reconciling training and practice Fitting training in Managing organizational impact Scheduling study clinics Balancing staff time and study clinics Adjusting schedule to deliver clinics Allocating time and space Impact of staff turnover on study Communicating the intervention to new staff	Managing organizational impact Scheduling study clinics Adjusting schedule to deliver clinics Allocating time and space Impact of staff turnover on study Communicating the intervention to new staff		
Positive changes to usual OA care	Increased OA Knowledge and skills Valuing new knowledge about OA Knowing more about OA Knowledge of OA management Understanding treatment options Good way to describe OA		Increased OA Knowledge and skills Structure for managing OA Knowledge of OA management Good way to describe OA Different attitude and approach Being able to discuss OA Able to discuss OA positively No longer “heart sink” consultations More enjoyable consultations		

(*continued*)

Table II.

Results heading	Themes coded under coherence	Themes coded under cognitive participation	Themes coded under collective action	Themes coded under reflexive monitoring	Themes not accounted for by NPT
			Actively manage OA consultations Encouraging patient responsibility Empowering patients		
Defining roles and maintaining congruence with usual practice		Defining roles Extends role supporting patients Suits current care philosophy Appropriate role in care pathway Contributes to OA care package Nurse clinic appropriate for OA care Maintaining congruence Intervention "fits" general practice Does not alter consultation format Similar to other chronic condition clinics Referral frees up GP time	Defining roles Extends role supporting patients Enhances current care Suits current care philosophy Appropriate role in care pathway Contributes to OA care package Nurse clinic appropriate for OA care Maintaining congruence Intervention "fits" general practice does not alter consultation format Similar to other chronic condition clinics Referral frees up GP time fits within time constraints OA knowledge bolsters existing practice Helps "close" consultations		

(*continued*)

Results heading	Themes coded under coherence	Themes coded under cognitive participation	Themes coded under collective action	Themes coded under reflexive monitoring	Themes not accounted for by NPT
Ambivalence about benefits for patients			Does not disrupt doctor-patient relations Benefits for patients Offering more to patients Making time to deal with OA patients Improved knowledge and patient care Patients felt they were given time and attention Patient tensions Difficult patient expectations and agendas Demotivated patients Unreceptive patients Adding burdens to patients		
Individual monitoring and long-term implementation	Barriers to implementation Lack authority to decide (nurses) Does not meet policy agendas Not economically viable Needs to be incentivized Does not fit practice priorities			Deciding what is workable Discussions with colleagues about intervention Integrating the template structure into consultations Continuation with the guidebook Working well with "normal" practice Selecting skills to use long term	Barriers to implementation Lack authority to decide (nurses) Does not meet policy agendas Not economically viable Needs to be incentivized Does not fit practice priorities

Table II.

low (compared with projected). Observation at a post-intervention delivery meeting revealed the reasons for this:

> GP10 said that one of the reasons for the lower number of referrals could be due to having locums in the practice. For the past 5-6 months (covering the study period) there have been 3 locums to cover staff sickness. They have been doing the bulk of consultations during this time. GP11 & GP12 were unsure as to whether the locums had been briefed about MOSAICS (Observation notes, 5 November 2012).

Thus, not briefing locum doctors (and it was latterly revealed new salaried GPs too) or notifying the study team that new staff potentially needed training meant that the intervention was not fully communicated and "collective action" (thus delivery) was not always achieved. Nurses discussed the impact of the lower than expected referrals by GPs and suggested this meant that not all of the allocated time for OA clinics was filled. They had to adjust rotas accordingly and constantly evaluate and adjust to varying demand:

> It took a bit of time, a bit of thinking about because not all the clinics were getting filled we ended up seeing patients in miscellaneous clinics otherwise we would have had a lot of nurses sitting around not seeing patients. That was the main thing really (Nurse2).

Another operational factor cited related to juggling room availability at practices with space restrictions. More pertinently some nurses found it difficult to timetable study-specific clinics alongside their other commitments and ensure patient needs were catered for:

> Yeah, yeah so with our surgery we don't have specific clinics for anything we just have a general clinic and fit the patients in so that's the only restriction we felt because you know it's difficult for me to say I'm going to block off Thursday evenings just for arthritis. I have to have a general clinic so that anybody that works can come to that clinic. I had it on the Monday morning and sometimes the workers were struggling to fit it in (Nurse3).

The data suggests that practices demonstrated elements of cognitive participation in terms of allocating tasks to appropriate individuals and allocating resources to ensure the trial intervention was delivered. However, cognitive participation was not always fully achieved in larger practices with high staff turnover because the system of internal communications, and external communications with research team, was not conducive to keeping new GPs informed of the study. Collective action was achieved by GPs and nurses by ensuring that timetabling was amended to ensure components (training and clinics) of the intervention fitted into routine practice.

Positive changes to usual OA care

GPs and nurses outlined their thoughts about what had changed as a result of participating in the study and how it benefitted them. GPs detailed three key ways that their handling of OA in clinical practice had changed. First, they detailed how they valued new knowledge about OA as a disease process and additional OA treatments. Consequently GPs said that they had a good "structure" for managing the consultation (which was in part influenced by the presence and format of the template). Therefore, they said they no longer automatically referred patients for X-rays but rather used the systematized approach from the training. Aligned with this, they said that they had altered the terminology used when describing OA as a diagnosis to patients:

> The phrases that I use when discussing OA have changed in that I think most of us used to call it wear and tear, degeneration, your body's you know grinding down the joints and these very negative terms […]. what I found useful was using the word repair which I hadn't really ever

> used before in the context of OA, but flare I think I had probably used, but flare and repair is a really useful concept I think for patients to think about their body constantly repairing (GP3).

The improved "structure" within the consultation also informed the treatment options GPs offered patients. Rather than relying solely on oral analgesia, GPs outlined how they had started to prescribe topical NSAIDs, such as creams, more frequently and placed more emphasis on exercise.

Second, in tandem with delivering a more structured and evidence-based approach to OA consultations, GPs described how their feelings about OA consultations had changed. Patients arriving with joint pain were no longer considered, to use participants' terminology, a "heart sink" consultation featuring a "dead end diagnosis" with the only option to offer stronger pain medications. Thus, as one GP stated:

> Well I know that I know […] my feeling is different, I have a much more positive feeling about the consultation and the problem (GP6).

As a consequence GPs discussed how OA consultations were less of chore and thus they gained more of a sense of achievement from dealing with patients, with the following statement summing up the general sentiment: "I found it slightly more gratifying to treat in some ways".

Third, bound up with newfound knowledge and the sense of being able to act positively in OA consultations, GPs suggested they could reframe the dynamics of the consultation. This involved shifting the focus from feeling that they had to paternalistically provide a solution, to focusing on "empowering" patients to take responsibility:

> GP7: And I think that helped, even that language to sort of empower them really helped them.
>
> Interviewer: Right okay, were there any ways do you feel or […]?
>
> GP7: No not really but I think because I knew that I had the option to actually talk through it I think you're more likely to perhaps engage in it whereas I think previously I was guilty of sort of saying, well you've got arthritis you know it's something that you're going to have to get on with. Whereas, so I probably shut them down a bit like that but now I had the opportunity to discuss with them ways they can help themselves so I think that was the main way really.

Nurses focused on the gains in biomedical knowledge that they had acquired as part of being involved in MOSAICS. First, they detailed how they had found it useful to be able to discuss what OA is and why it occurs with patients:

> It was things like getting the explanation of OA right, because that had changed from, obviously, when I trained and when I'd done arthritis in the past (Nurse1).

Equally, knowledge of treatments was deemed to be a key change in nurses' usual practice:

> I would try and fit that in, in a consultation, about their lifestyle, keep up with exercise. So I don't miss an opportunity if I can. Whereas before, perhaps I wouldn't be so much aware of it, whereas I am now. For me it was a positive thing to come out of it (Nurse4).

Like the GPs nurses described how they felt more confident dealing with patients who consulted with OA. Nurses also suggested that they were able to alter their relationship with OA patients, because the study represented an opportunity to play more of an active role in patient care:

> Oh, with OA, definitely, you know, definitely, because I was able to, I suppose in a way, treat them autonomously. I didn't need to refer them, sort of, to the doctor to discuss the arthritis and, you know, I felt, as I say, I felt prepared and better to treat the patients (Nurse3).

Previously we have reported that at the initiation of the study, it was important for practices and practitioners to attain coherence (Ong *et al.*, 2014). Equally, as the intervention was delivered it was crucial that changes made to clinical practice were acceptable and workable for GPs and practice nurses. This remained the case because the new knowledge they had gained "made sense" (coherence) in that they continued to recognize the need to enhance their knowledge and ways of approaching OA consultations. In this way, collective action took place through integrating knowledge and the fit with the consultation.

Defining roles and maintaining congruence with usual practice

For both professional groups who delivered the intervention, one of the key factors which made it implementable was the intervention's congruence with existing general practice structures, referral pathways, restrictions on consultation times and individuals' interpretations of their existing care philosophies.

In particular, the intervention fitted well with the constraints of the average "ten-minute consultation" GPs work to in UK Primary Care:

> Just like it can be fitted into a GP consultation I think it could also fit in quite nicely to a nurse consultation. So administratively I don't think necessarily needing anything that we're not already offering really (GP4).

Second, the intervention was interpreted as complementing consultation styles because GPs placed an emphasis on having learnt new medical knowledge as opposed to consultation skills:

> I think we're doing much of it anyway but the bits that I outlined earlier, the flare and repair ideas and the tools that we have now to back up our lifestyle advice are particularly useful (GP8).

One of the key strengths for GPs was their perception that they now had a more comfortable way of closing off consultations or "disposing" (May *et al.*, 2004) of patients. Being able to offer the guidebook and refer on to see the nurse was seen as a "natural" way of ending the consultation smoothly and minimising the risk of aggravating patients who may feel that they should get more from the GP:

> So that's very favourable because it means that the consultation, often the consultation if it ends in a referral or a prescription that is a very natural end to a consultation and it means it's quite easy to close off […] So having that as a natural end point is always beneficial for a ten minutes consultation (GP5).

Consequently GPs felt that their time was not consumed by patients constantly consulting for OA, and by referring to the nurse they could "actually be treating someone else":

> You know if we were expected to do that that would be a whole new consultation, another ten minutes but using the nurses you know they're more than able to take on that role and I think the patient, the ones that I spoke to, quite liked the fact that they had that opportunity (GP7).

The nurses contrasted their role in the intervention with that of the GPs and emphasized the importance of giving information:

> I mean this is just an example from some of the patients, you know – they just went in there, had this condition, really wanted an operation, be listed for it. They were offered

> to come to us and that was it, they were just given an appointment to go and see the nurse. So they didn't get the information so much from the doctor, as they did from the nurse (Nurse4).

The nurses felt that by explaining treatment options to patients they could arrive at "better" decisions, more in line with the guidelines, and thus they positioned themselves as fulfilling an important role in terms of the work of the intervention. Additionally, offering "self-management" support for OA was interpreted as an extension of the lifestyle advice they offered in other chronic disease management clinics:

> For me, I would say, really, it's a bit like as much as I do in my diabetic clinic, because I do promote, you know, a healthy lifestyle, with particular exercise, and all the benefits of it. So that was, like, just transferring it across to the MOSAICS patients (Nurse2).

Nurses simultaneously interpreted the intervention to be about "educating patients" in a "patient centred" way, which they felt resonated with their existing philosophy of care (Kennedy *et al.*, 2014).

Thus, for both GPs and nurses the new way of working was acceptable. In NPT terms, this was because the intervention met two key criteria. First, the intervention fitted existing patterns of organizational working, namely, referral and inter-professional roles, and demonstrated that roles had been clearly and satisfactorily defined and adopted in GP practices. Thus, it meant that cognitive participation (or defining roles and responsibilities) was easily met. Second, simultaneously the intervention was easy for practitioners to achieve, i.e. "collective action", or the process of embedding the intervention within existing relationships and ways of working. Yet, some contradictions emerged, in particular concerning the clinician-patient relationship to which we will now turn.

Ambivalence about benefits for patients

GPs and Nurses reflected on how the new approach benefitted patients (or not) and they offered insights into whether the intervention allowed "collective action" to be achieved in relation to how well it worked for patients and influenced their relationships with patients. All participants described positives and negatives in relation to patient interactions, thus demonstrating tensions in their accounts which posed questions about how well the intervention universally "fitted" into routine practice.

GPs described how they thought that participating in the study allowed them to "offer more" practical advice and support above and beyond what they would usually provide. This related to the earlier discussion of how they felt their practice had changed.

A second element was that the GPs felt they were able to more clearly describe OA and discuss the various ways of managing or treating OA:

> It gave us the time to actually focus on arthritis and the symptoms that patients were presenting with to be able to give them the best of our knowledge but also what you improved on. So yeah it gave a lot to me but also to the patients (GP7).

A third way in which GPs thought patients gained was from a sense of being taken seriously, or being made a "special" case by being referred to the nurse clinic and were not being "fobbed off" as one GP put it. Conversely, GPs detailed tensions that arose when discussing pain medications and lifestyle advice which conflicted with patients' expectations:

> And that then is tricky to educate somebody when they've come along with an idea of well this happened or that happened and my friend got an injection and so on (GP3).

Other GPs discussed problems with patients who had low levels of "motivation" who did not want to become "responsible" for their own health. Thus, the balance between incorporating a new way of working and not upsetting patient relations (Blakeman *et al.*, 2010) was outlined as a problem within the trial. Furthermore, GPs did not necessarily think that patients who had an "agenda" or "lacked motivation" would gain any benefit because they may not be open to taking on board the advice provided:

> We have to accept that there may be a high level of failure rate due to lack of motivation on the patient's behalf. That's probably the best way to wrap it up! (GP2).

Another concern was that some patients may not wish to be referred to the nurse because it potentially conflicted with the patient's agenda: as one GP put it "patients think they are being delayed" in their quest to see a specialist. Alternatively, some GPs outlined how they sensed that some patients felt that they had to "jump through" additional hoops in their care pathway and had a "further layer", or burden of "hard work" (May, 2006), to deal with when referred to the nurse. These GPs observed that the nature of people's overall disease burden played a part, which led to people not always attending nurse clinics:

> Because often these are patients with lots of co-morbidities, so they've already going to diabetic clinic, or hypertension clinic, and adding another clinic on top of that for them to go to just felt a bit much for them, I think, sometimes (GP6).

GPs assessment of the intervention was equivocal, particularly with regard to potentially spoiling their relationship with patients. Confidence in the worth of the intervention – information, guidebook, referral – (in NPT terms, relational integration) was achieved but whether it helped patients (NPT terms: interactional workability) remained inconclusive.

Nurses, like GPs, highlighted the increase in the amount of time and attention given as a key benefit for patients. In addition, they thought that the ability to offer hope to patients who previously did not think much could be done for their knee pain was considered a crucial part of delivering the consultation:

> And I also had another gentleman who said he thought he'd got OA and that was it, sort of, thing. He didn't think there was anything else, any other treatments, other than having surgery, and he was really thankful that there was something else, you know (Nurse1).

As a result of the increased time, attention and providing alternative treatment options nurses suggested that some patients were likely to "give anything a try" and consequently attained health gains.

Nurses, like GPs, did not paint a picture of a universal success story. They too found it difficult to manage patients who had arrived at consultations with what they termed "fixed" or "pre-conceived ideas" about what the consultation should contain:

> Because they were coming, some of them, and didn't expect us to sit and chat and be educated in the best way forward without an operation (Nurse3).

The lack of success was placed at the patients' door and it did not necessarily dent nurses' trust in the intervention itself. They did not appear to adjust the intervention in response to patients' lack of receptivity which differed from other studies reporting professional confidence in adaptation (Durlak and DuPre, 2008). While clinicians thought that patients gained some benefits from the intervention, the challenges and doubts they discussed arguably led to a "patchy" (Lloyd *et al.*, 2013) form of collective action.

Individual monitoring and long-term implementation

The NPT construct which deals with on-going routinization is "reflexive monitoring". As with all NPT constructs it is split into four sub-constructs. The first two are "systemization" and "communal appraisal". They refer to the processes of information collection about the worth of an intervention and group reflection on said information. The remaining sub-constructs of "reflexive monitoring" relate to an individualized process of appraisal and monitoring ("Individual appraisal") and the "reconfiguration" work of modifying an intervention to fit into existing patterns of working after either collective or individual appraisal. In the intervention practices no formal, structured collective process for collecting information, reviewing or reflecting on the intervention appeared to exist. This was not necessarily an impediment to implementation because GPs and nurses were quite clear that they had appraised the new approach within their individual practice and decided what could be modified at the micro level and what they realistically could continue beyond the end of the study.

GPs described how they had absorbed the structure of the template and used it to guide their consultations:

> As GP2 was just saying earlier it's, kind of, embedded in his head already, so he's doing it without the structure of the template, whatever. I still use that structure (GP1).

GPs suggested that the template structure was easily followed and could be sustained beyond the lifespan of the study. They also said that they would continue to hand out OA guidebooks or other resources (usually Arthritis Research UK "keep moving" exercise leaflets) so long as they were freely available.

Nurses outlined that they too would opportunistically embed core principles of the consultation into their routine chronic condition clinics and use written resources as appropriate. As this post intervention feedback observations revealed:

> GP9 said that he still gives them out and will continue to do so until he runs out. The practice nurse said that she also hands out the guidebook and still uses the ARUK sheets providing exercise advice when she opportunistically discusses OA with patients (Observation notes, 1 October 2013).

Long-term implementation of the whole intervention model was dictated by two things. First, power relations and decision making within the practices. Second, the influence of external drivers such as policies and financial incentives. To this end, the NPT constructs were less effective at helping to fully understand long-term implementation. Perhaps unsurprisingly nurses thought that they had little say in the decision whether to continue with the clinics beyond the study. As one nurse put it "the GPs are in charge". At another practice a nurse stated:

> The only thing is if the doctors wanted to carry on, that's the only factor. If they want it then we will do it (Nurse3).

GPs expressed that the complete intervention was unlikely to be maintained. While they thought that OA clinics could potentially be linked to other chronic care agendas, they did not want to continue with them as a standalone entity. GPs, and in particular senior partners from practices, outlined that they did not have the necessary organizational resources to operationalize OA clinics:

> And the OA clinics take a lot of time. I mean it's okay while you're resourced, but once the study is finished, it's a lot of time. Basically, every Monday morning is written off. Written off's not the right word, but used up in OA clinic. Now, on-going, non-resourced nurse time of an OA clinic, half a day every week, has a great cost implication (GP7).

This related to organizational priorities and targets practices had to meet as set by policy agendas and incentivization, for example:

> GP1: The reason I'm slightly hesitant is that I just know we haven't got chronic, any of our chronic disease management clinics running properly yet (small laugh). Osteoarthritis would be lower down the pecking order I think than getting our diabetes service sorted out.
>
> Interviewer: why do you think that would be the case?
>
> GP2: I think that would be the case really because of the QOF workload and the way in which GPs are rewarded for monitoring chronic disease and also the importance of trying to get tight glycemic control and monitoring in place for diabetics I think that we would prioritise diabetic care and try and get that optimised before we would cast our gaze towards osteoarthritis.

Thus, whilst initial participation in the study made sense (Ong *et al.*, 2014) beyond the funded confines of the intervention whole system routinization was not deemed to be "coherent" or make sense as a priority. Routinization was dependent on the reflexive monitoring sub process of "reconfiguration", or the process of honing down what was practical and acceptable to take forward within the broader context of Primary Care.

Discussion

Applying the NPT constructs to the MOSAICS study allowed for a systematic assessment of the processes of implementation and embedding. One tension in utilising such an approach is that it can influence the focus of the data collected, subsequent analysis, and the findings. But as detailed in the methods section we took steps to ensure themes, issues and topics which sat outside of the scope of NPT could be explored and accounted for. We detail the implications of these findings for theory and practice below.

Coherence and cognitive participation took place because the intervention was considered worthwhile as it provided new knowledge and a way to manage a patient group who were previously considered "difficult" (Ong *et al.*, 2014). GPs and nurses were able to re-organize their work to accommodate the training because it was a time-limited disruption of organizational routines. The intervention was also acceptable at individual and the organizational level as practitioners considered it could be incorporated into existing structures and ways of working (Elwyn *et al.*, 2008). The new model of care was deemed to be feasible and congruent with practitioners' current philosophies of care and everyday practice. The intervention drew on the WISE approach (Kennedy *et al.*, 2007), and its main emphasis was on enhancing support for self-management through disease-specific information and advice which was consistent with usual care. In this respect collective action was achieved because it was considered practical at the level of the individual practitioner and negated difficulties regarding fit with existing clinical routines (Sanders *et al.*, 2011). Some doubts and problems emerged regarding how universally beneficial or workable the intervention would be with "de-motivated" or "agenda" driven patients and those with complex multi-morbidities who may not appreciate an extra layer of illness "work" (May, 2006) represented by referral to another clinic. Thus "collective action", from the perspective of clinicians, was not fully achieved in relation to patients. Collective action could be described as being "patchy" (Lloyd *et al.*, 2013) in terms of the intervention as a whole. Practitioners adapted the intervention either because of policy/organizational constraints or patient responses. This tendency has been reported in other arenas (Durlak and DuPre, 2008) but adaptation of health interventions and their contribution to outcomes is less well documented. Similarly, May (2013) highlights that innovations are changed as they are implemented and argues that this process needs to be better understood.

On-going monitoring, feedback and assessment of the intervention took place opportunistically, featuring little inter-professional communication. Thus, reflexive monitoring was mostly undertaken at an individual level which did not appear harmful for the intervention. In larger practices with a higher turnover of staff and use of locums where the intervention was not communicated reflexive monitoring was adversely affected.

Macro-level policy imperatives shaped practice priorities which resulted in the "whole system" new intervention not being perceived to be sustainable. Continued routinization of the intervention into usual care beyond the lifespan of the funded study was dependent on individualized monitoring and taking forward tacit knowledge (often mediated by the template). Paradoxically a situation emerged where initial participation in a funded research study made sense because it was perceived to fit with macro policy drivers and organizational factors (Ong *et al.*, 2014), but as an unfunded way of delivering routine care the model did not maintain "coherence" at the practice level, hence the significance of individual reflexivity.

The ever changing landscape of health care policy and the receptivity of organizational contexts (Pettigrew *et al.*, 1992) have bearing upon attempts to implement interventions and transcend the scope of the NPT (Pope *et al.*, 2013; Knowles *et al.*, 2013; Clarke *et al.*, 2013). Extending this line of thought, it is possible to argue that understanding longer term implementation is dependent on more explicitly incorporating the influence of the interaction between macro-meso-micro factors. As May (2013) states, "implementation […] needs to be understood from the outset as a process – that is, as a continuous and interactive accomplishment – rather than as a final outcome" (p. 1). Thus, it is imperative that coherence, cognitive participation, collective action (and how all four NPT constructs are influenced by macro processes), is understood as a cyclical and on-going process when undertaking implementation work. May (2013) discusses the need to reintegrate the constructs of the NPT into a "general theory of implementation" and essentially notes that macro-level factors can influence "capacity" and "potential" (or readiness and commitment) for action that agents in context have. In other words macro factors actively influence how people think they can act, or make a "contribution" to action (May, 2013). Thus, we contend that interventions driven by funded research studies may initially make sense and can fit with usual ways of working when considered as bounded research projects. However, long-term policy and structural factors which influence "capacity" may, at the end of a study, render an intervention, or elements of an intervention no longer "coherent" or sustainable. This could be problematic, as Clark (2013) draws attention to the issue of the dynamics between "components" and the "whole" of complex interventions which may or may not contribute to their efficacy: 'complex interventions are formed of parts that […] exercise power individually, in combination or as emergent properties either as parts or through the powers of the parts and the whole of the intervention" (p. 192). It is essential to understand the dynamic process of adaptation as an integral part of implementation and routinization, and to assess its contribution to eventual longer term outcomes (positive and negative). Our study highlights that this aspect may be a useful addition to theoretical frameworks in order further explore the social mechanisms that shape the trajectory from achieving coherence to embeddedness.

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