

Realist Evaluation of Public Engagement and Involvement in Data-intensive Health Research

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Plain English Summary

Public engagement and involvement in health research is now well established and makes a valuable
contribution to the research process. However, little is known about its impact on participants. This
article investigates how involvement in a data-intensive health research public forum impacts on
public forum members, rather than the research process. Personal involvement portfolios were used
to support their involvement work and help evaluate if and how involvement in research activities
enhanced members' personal development. This article suggests that the use of a personal
involvement portfolio in a public forum will aid forum members' personal development if they value
its use as a framework for learning. We found that women and men used and valued the portfolio

for different purposes. There seemed to be a difference in the degree to which gender affected the way members used of the portfolio and further research is needed to explore this. In addition, evidence from this realist evaluation recommends that engagement and involvement should always be underpinned by procedures which ensure that participants receive ongoing and tailored guidance and support throughout the process.

Abstract

Background: High quality public engagement and involvement (PEI) in data-intensive health research is seen as one way of ensuring that social legitimacy, i.e. a social license, is conferred through public acceptance of the need for research use of their data. This is a complex research area, and portfolios of involvement have been suggested, but not yet evaluated, to support the role of public contributors. The study aim was to evaluate if and how membership of a data-intensive research public forum that included the use of an involvement portfolio would act as a mechanism for enhancing members' personal development. Our preliminary middle range theory was that the use of a portfolio as a framework for learning would facilitate forum members' personal development.

Method: Qualitative data were collected from 15 current and previous forum members, via semi-structured interviews, notes from meetings, and consultations with and feedback from members. Data were critically compared, contrasted and reviewed until no new themes could be discerned and then condensed into context-mechanism-outcome (CMO) configurations. Realist evaluation was used to generate a theoretical and empirical appreciation of the contextual circumstances and mechanisms which help to explain the extent to which involvement with a public forum would enhance members' personal development and, if so, how, why, and for whom.

Results: Three CMO configurations were identified. All of them showed that using the portfolio facilitated growth in forum members' personal development, but only where the members valued using the portfolio. This was particularly so for female forum members. Members valued the

portfolio in one or more of three ways: as a tool to record and evidence activities, to facilitate reflective practice or as a guiding framework.

Conclusions: Data analysis and consideration of the three CMO configurations suggests a refined middle range theory that ‘The use of a portfolio as a framework for learning in a public forum will facilitate forum members’ personal development if they value its use as a framework for learning’. Further work is needed to confirm these findings both elsewhere in data-intensive health research and in other complex research areas using public forums for PEI.

Keywords

impact; patient and public involvement; public involvement; realistic evaluation; personal development

Background

Public engagement and involvement (PEI) can play an important part in improving the conduct and quality of research [1-4]. For example, it can improve participant information materials and increase participant recruitment and retention [1, 5]. By the term PEI, we mean a variety of activities for the purposes of “raising awareness of current research, consulting members of the public on their views about health research, working in partnership, to empowering members of the public to play a role in shaping current or future research or governance practices” [6]. This apparently all-encompassing term is used within data-intensive health research for researchers who have come to this discipline from a data science backgrounds, where the term ‘public engagement’ alludes to different purposes and activities than it may do to those from health or social science backgrounds [7, 8].

Data-intensive health research, i.e. “research conducted through linkage and analysis of data from one or more sources, especially health-related data” [9], may not appear to need PEI at first glance. After all, data scientists typically have no contact with their large numbers of “research participants”, who do not need to be recruited or retained. However, high quality PEI in data-intensive health research is seen as one way of ensuring a social license from the public to accept the need for the research use of their data [10]. Recently, there has been international consensus that PEI is “a key part of the solution to establish socially beneficial data-intensive health research for all” [9]. However, PEI in data-intensive health research is seldom described in the literature [11-13] and has rarely been formally evaluated [11].

The impact of PEI has tended to be evaluated using assessments of the impact on the research [1] or researchers [5, 14]. A large realist evaluation has investigated the key contextual factors and mechanisms that lead to the desired impact on research [15]. A recent systematic review has also highlighted that PEI has personal benefits for the public contributors themselves, for example they feel listened to and empowered, and gain knowledge and skills [16]. However, it is unclear which methods of PEI consistently deliver personal benefits to members, as there are numerous means through which PEI can be delivered [4]. High quality and meaningful PEI is often delivered using public groups or forums, both in clinical [3, 5] and in data-intensive health research [11, 12]. Such public forums act as an interface between the public and researchers in order to enhance research impact [17]. However, given there is evidence that involvement in other types of forums can facilitate growth of members’ personal development [18, 19] it is probable that research-focused public forums also offers personal benefit to members.

However, membership of a PEI forum may not, on its own, be sufficient to ensure personal development. Using a portfolio, such as the Involvement Portfolio developed by the NHS Research and Development Forum User and Carer Working Group [20] may further facilitate personal benefit to members. The NHS portfolio enables public contributors to create a record of the skills and

expertise they have gained from their PEI work [21] and is recommended for public contributors by the national public involvement organisation INVOLVE [22]. The NHS portfolio has not been formally evaluated. However, using such a portfolio may enable forum members to deliver high quality PEI through an enhanced sense of power, control and active influence in the process brought about because the use of portfolio is predicated on the premise that the owner has the capacity and autonomy to communicate, reveal and disclose their personal evidence at their discretion. This has been widely reported in research which uses diary methodologies [23, 24].

Little is known about how membership of public forum affects aspects of personal development nor about the causative underlying mechanisms that might facilitate enhanced personal development through this membership or through the use of a portfolio. Thus, more needs to be done to help understand and contextualise the impact that membership of a public forum has on the members themselves. Quantitative evaluations which evaluate the impact of PPI have predetermined endpoints, and thus 1) lack the ability to evaluate unexpected outcomes, as the researchers ‘don’t know what they don’t know’ and 2) do not take into account the context within which the evaluation data were generated [5, 25]. One of the most appropriate methods of evaluating such outcomes is realist evaluation. This approach aims, broadly, to conduct an evaluation with a view to understanding what works, for whom, and under what circumstances [26-28]. Thus, it moves beyond traditional evaluation of the efficacy of the process or intervention being evaluated and is also concerned with providing a framework which facilitates the ongoing testing and refinement of the evaluation theory associated with the intervention.

Realist evaluation is often presented as the construction of a hypothesis which is tested and refined to generate a middle range theory (MRT) [27, 28], described as an “account of the processes that explain how an intervention leads to a particular outcome” [27]. Often realist evaluations start with a preliminary MRT and end with a more refined MRT [26]. Such iterative cycles of inquiry and refinement enable the development of a stronger theoretical appreciation of the contextual

conditioning which underpins the success or failure of the intervention or programme being evaluated. Our preliminary MRT, based on the evidence outlined above, proposed that a public forum which used a portfolio as a framework for learning would enhance forum members' personal development.

Aims and Objectives

The aim of this study was to evaluate if and how membership of a data-intensive research public forum, which included the use of a personal involvement portfolio, would act as a mechanism for enhancing members' personal development. Realist evaluation was used to generate a theoretical and empirical appreciation of the contextual circumstances and mechanisms which help to explain the extent to which involvement with a public forum would enhance members' personal development and, if so, how, why, and for whom.

Methods

Setting

The setting for the evaluation was the Connected Health Cities (CHC) project. CHC was a Department of Health funded pilot programme [29], which aimed to transform healthcare across four regions in the North of England by using healthcare data to improve the delivery and outcomes of selected care pathways. The CHC PEI strategy focused on gaining public trust that CHC researchers were using health data responsibly, safely and to improve services for the benefit of all patients. The objective of the strategy was to seek public engagement and involvement in GM CHC's use of transformative healthcare solutions. A public forum was chosen as one of the main mechanisms for PEI in the Greater Manchester (GM) CHC region. Concomitantly, the forum also

supported GM CHC research staff by offering a 'lay review' service of both initial research ideas and more developed research proposals.

Public forum and Forum Members

The forum was created in 2017 and ran for 18 months, until the CHC project started to wind down.

Forum members were recruited via widespread advertisement and final selection of 12 members

was based, in part, on their commitment to being actively involved in the evaluation process. Three

members left the group in the first year and were replaced by three reserve members. Throughout,

there were five women and seven men in the forum, three of whom were under 25 years of age.

Profile of membership: 'students' (two), 'retired' (initially seven, one of whom left and was replaced

with someone employed) 'employed' (initially three, and then four).

The forum members were provided with materials designed to facilitate their learning, personal

development, and ability to contribute fully to GMCHC research, public engagement activities and

the evaluation process. These materials related to both data-intensive health research, examples

include a glossary of health informatics terminology and information on how to read research papers

and personal development examples include how to cultivate critical learning skills and how to

develop personal reflection. Members were also provided with individualised support for the

evaluation process, such as personal one-to-one contact, electronic and telephone consultations,

and training opportunities for example Massive Open Online Courses (MOOCs).

With the growing desire to map PEI in health research, portfolios have become a useful tool for

forum members who wish to evidence their practice. The forum members were encouraged to keep

a diary in the form of a well-established personal involvement portfolio, developed by the NHS

Research and Development Forum User and Carer Working Group [20]. The use of the portfolio

however was not mandated. The portfolio was designed to provide participants with a framework

which enabled them to: identify their developmental needs and record testimonies of their

progression; outline a personal learning agenda e.g. through a series of undertakings which

contributes to the achievement of a specific learning objective and compare their ongoing development against their original knowledge base. The members could also use their portfolios to provide feedback by recording information about what they thought of the PEI process (especially what worked, did not work and could be improved, and whether the process was balanced and inclusive) and how it could be improved. The portfolios were continuously amended and updated to document members' personal development, increased awareness and empowerment and attainment of transferable skills and knowledge acquisition. The use of portfolios is associated with the development of reflection [24, 30]; however, it is widely acknowledged that developing one's reflective practice is challenging [31]. Public forum members were, therefore, provided with materials which detailed different approaches to and types of reflection, were supported individually to practice their reflective skills, and took part in an interactive presentation which showcased examples of how to develop reflective practice.

There were seven meetings of the forum over the 18 months. In addition, forum members contributed to a number of other GM CHC research activities, and to other aspects of the GM CHC project that were of particular relevance to their individual interests. Examples included 1) iterative involvement in the design of a survey to determine public acceptability of patient focused interventions to reduce antibiotic prescribing and 2) proposed research collaboration with a commercial company concerned with interventions for stroke patients. Members' evaluation of how these activities and events contributed to the aims and objective of the CHC public engagement strategy were captured in their portfolios through reflective writing. This paper, however, focuses on the evaluation of public forum membership and its impact on the personal development of the forum members.

Data collection

Realist evaluation involves determining how aspects of a project have performed within its specific milieu and environment. The choice of data collection, analysis methods and tools for this evaluation was guided by the types of data needed to answer the evaluation questions.

Most data were qualitative and collected over the life course of the forum. After recruitment but prior to commencement of the forum members were asked to reflect upon and document what they hoped to learn and take away from their involvement in the forum. This provided a baseline assessment which was used by the first author (GH) and each individual members to help understand and plot their 'journey' through the life course of the public forum. Ongoing data were collected formally via 1) semi-structured interviews with 10 members, 2) field notes from the forum meetings and 3) data collected informally via emails, personal communications and feedback from public forum members. Additional data were also collected from the three public forum members who left the forum in the form of an exit interview. Interviews were not recorded but were documented in detail and the notes distilled and condensed into a summarised account of the session. These accounts were subsequently reviewed by the members and subject to some minor corrections or clarifications were signed off as being a true and accurate representation of the session.

The portfolio played an important dual role of providing the members with a tool to record their involvement and providing the evaluator with ongoing data to appraise how best to support their involvement. Members contributed selected reflections from their portfolios, which were submitted for group discussion to the public forum meetings.

Forum members also contributed to data collection via personal one-to-one consultation sessions and a final summative public forum meeting at the end of the project. During the consultations, the researcher and the individual member worked together to draw out understandings of the outcomes and impact of the project. During the final public forum meeting learning was gathered

from across the life course of the project and discussed by the members and the first author (GH). Collectively, the consultations and the final public forum meeting drew upon the members' data and the learning which they had built up over the course of the project to assess the overall value, successes and failures of the project.

Data analysis

The data analysis was primarily undertaken by the first author (GH) who used inductive and deductive coding to structure the process. The coding process was underpinned by an iterative approach consistent with qualitative realist evaluation [26, 32] which enabled the evaluator to identify, clarify and coalesce themes.

Preliminary analysis was shared with the forum members during meetings, in which the researcher and the members assessed and discussed the analysis and interpretation of the data. During this time, the researcher and members engaged in the process of data immersion and crystallisation, i.e. a process that distils understanding from text. This facilitated the emergence of concepts organically in addition to those identified through a deductive coding process. This process was repeated throughout the life course of the project and continually fed back into the analytic process.

Following the emergent coding procedure [33], the data were examined using thematic analysis, which facilitates the regularisation of narratives from transcripts. Data were transcribed, read for general comprehension and then re-read thoroughly. Core meanings were identified and condensed into categories. Provisional themes identified during open coding were labelled based on recurring words, expressions, topics, premises and concepts. Alongside ongoing data collection, additions and changes were made to coding, to ensure that the analysis was grounded in practice and that aspects of the data were not over or under represented in the findings.

Pawson and Tilley's approach to data analysis requires the evaluator to identify and examine the contexts (C) under which the mechanisms operate, the underlying generative mechanisms (M) associated with the intervention or programme being evaluated and the conditions for and the

pattern of outcomes (O) produced [26]. This is articulated as a linked context-mechanism-outcome (CMO) configuration (C + M = O) which is widely used as the main structure for realist evaluation [26-28]. The above iterative analysis used data exploration, analysis, cross-referencing and reflective practice to group together themes sharing common characteristics and to unpack the similarities and differences between themes in order to build up CMO configurations. This was achieved by critically comparing, contrasting and reviewing the data until no new themes could be discerned and the data were continually condensed. This enabled sometimes large, unwieldy categories to be refined into more specific, integrative themes whilst retaining important aspects of the properties and dimensions of the umbrella configurations. These configurations were then used to refine the original MRT.

Results

Overall, some data were collected from all the 12 inaugural members and the 3 replacement members, although a complete dataset was not available for some. There were missing responses from two members and a further two members did not complete the introductory questionnaires; three of these four members were men.

Three CMO configurations were identified from the data, as shown in Table 1. All of them showed that using the portfolio facilitated growth in forum members' personal development, but only where the members valued using the portfolio.

Table 1.CMO configurations from the realist evaluation.

Configuration	Title	Details
1	Valuing the portfolio as a tool	When members value the portfolio as a record of achievement (C) , personal motivation to record and map

	to record and evidence activities	transferable skills (M) , facilitated enhanced skillset, especially in newly acquired skills (O)
2	Valuing the portfolio as a tool to facilitate reflective practice	When female members had previous experience of using reflective practice in a professional capacity (C) , the personal motivation to adopt reflective practice to supports ones' personal development (M) led to enhanced self-confidence and self-awareness (O)
3	Valuing portfolio as a guiding framework	When participants had a positive perception of the portfolio as a guiding framework (C) there was a willingness to use the portfolio (C) . This ultimately enabled reflective practice (M) which enhanced reflective experiential practice, critical thinking and improved communication skills (O)

Configuration 1 – Valuing the portfolio as a tool to record and evidence activities

This configuration suggests that, when members valued the portfolio as a record of achievement **(C)**, personal motivation to record and map transferable skills **(M)**, it facilitated an enhanced skillset, especially in newly acquired skills **(O)**. The enabling mechanism was a positive perception that their portfolio would be useful in helping them obtain additional public service roles and or employment. Many of those in the public forum were keen to use their involvement as a stepping stone to membership of other public involvement groups. Thus the portfolio was useful as a document that summarised members' progression throughout their involvement in the public forum. It was seen as providing members with a record and proof of what they had learnt and the skills they had developed. It was valued for use in applications and at interviews as means of demonstrating their employability and or a broader commitment to career development or societal advancement. For some, primarily male forum members, the portfolio acted as a living document which showcased

274 how involvement in a public forum had made an important contribution to gaining practical skills
275 that they could use in real world settings.

276 *"If I were to apply for a role on another Health related forum or committee for example,*
277 *the PIP [personal involvement portfolio] will show: - a desire to improve my knowledge*
278 *and willingness to learn and develop". (Member A, Male)*

279 Two individual level contextual factors were identified as facilitating this mechanism. The first was a
280 perception that the portfolio could act as a framework for continuing professional development i.e.
281 that it could be employed as a tool in which the attainment of personal skills could be mapped
282 against the requirement for external professional standards.

283 *The portfolio will be really useful for my career development because it's a record, of what*
284 *I have done in my own time to improve my skills. This will enhance my employability*
285 *because it demonstrates my commitment to learning new skills and ongoing development,*
286 *things that are important in a professional development capacity. (Member C, Male)*

287 The second was that the portfolio helped members identify gaps in their knowledge and this
288 awareness encouraged some members to undertake additional study to improve their learning.

289 *The PIP [personal involvement portfolio] has been important because I'm keeping a record*
290 *of all my learning and development that's specific to GM CHC and it has helped me spot*
291 *where I'm a bit lacking in knowledge and so I have tried to address that so for example I*
292 *have completed a MOOC about Antibiotic Resistance and know so much more now.*
293 *(Member B, Male)*

294 This subsequent additional learning frequently enhanced the members' self-confidence and inspired
295 greater involvement in public engagement events and activities within the GM CHC project.

296 However, not all the members valued the portfolio as a tool to record and evidence activities. The
297 face to face consultations and exit interviews identified that the oldest members of the forum were

298 less enthusiastic about the portfolio than the other members. These members were all retired and
299 this may have influenced their attitude towards this aspect of the portfolio. They felt they had little
300 reason to catalogue their activities within the broader context of this being useful in obtaining
301 employment or additional public service roles.

302 Exit interviews with the three members who left the forum early provided a rich data source in
303 which to explore how initial involvement in a public forum influenced members' personal
304 development. For these members, the portfolio played only a small role in enhancing their personal
305 development but these skills had contributed to an improved sense of how to work effectively in a
306 team or sharpened their reflective aptitude.

307 *"I don't think I really had the time to pick up new skills but writing down my personal*
308 *statement did help me to appreciate that I had become a better listener and also that*
309 *using the PIP [personal involvement portfolio] was helping me hone my reflective skills".*
310 *(Early exit member1, Female)*

311 Many members (N=7, five of whom were women), however, thought the portfolio was very useful
312 for documenting their self-development. The portfolio worked well because it facilitated the
313 development of personal skills, provided members with a hard-copy record of involvement and was
314 an effective way of learning and developing both individually and for the programme. However this
315 appeared to be linked to gender and previous experience of using reflection in a professional
316 capacity. Male forum members primarily valued the portfolio for its utility as a record of
317 achievement.

318 *"The PIP [personal involvement portfolio] is a useful document for anyone wishing to apply*
319 *for work or any voluntary role. It is a good document to support any application as it*
320 *shows commitment, willingness to learn and contribute as well to self-development".*
321 *(Member D, Male)*

322 Female forum members, however, also valued the portfolio because it facilitated personal learning
323 and development, particularly those who had previous experience of using reflection in a
324 professional capacity.

325 *I have experience of evaluating my learning in a number of ways. For example in the*
326 *courses I have undertaken in [name of company], maintaining a reflective journal was an*
327 *essential learning tool and contributory element. Self-awareness has been engendered*
328 *into both my formal learning and operational work. So writing it down is not new to me. I*
329 *am also an organised person and like to review what I have done, reflect, so I can identify*
330 *learning points to fulfil my drive to develop myself. (Member E, Female)*

331 The degree to which gender may affect members' relationship to diary based approaches to learning
332 and development will be considered in the discussion.

333 The single most important outcome reported by eight forum members was increased self-
334 confidence. This was typically described as a growing sense of belief that they could take part and
335 be effective in public engagement activities. During the first year of the forum, members did not feel
336 confident enough to help out at public engagement events. In the final six months of the project,
337 their developing self-confidence saw some members participate in public engagement events,
338 engaging in discussions with the public, running activities with school children and co-designing and
339 delivering workshops for young people.

340 *Even though I am used to leading, facilitating and generating discussion amongst groups*
341 *and individuals when we started I didn't feel confident about going out and getting*
342 *involved in the public engagement activities. I've grown in confidence loads though and I*
343 *have done loads of different activities and events this year and loved doing them.*
344 *(Member J, Female)*

Data from the face to face consultation sessions revealed that female members were particularly effusive about the affect the portfolio had on their transferable skills and the broader application of the newly acquired skills to other aspects of their lives. For some this meant taking part in digital activities which they had not previously come into contact with or did not have the confidence or expertise to tackle. For others it also encouraged health and wellbeing related behaviour change.

“It has encouraged me to apply knowledge acquirement to things I could not do before – taking part in webinars, using doodle poll e.g. joining the on-line [discussion] group for the [public engagement activity] was very self-motivating and helped me improve my fitness”.
(Member F, Female)

Overall, it may be that this very pragmatic aspect of a member’s involvement in a public forum can help to demonstrate how the acquisition of tangible skills contributes to personal development.

Configuration 2 – Valuing the portfolio as a tool to facilitate reflective practice

This configuration suggests that, when female forum members had previous experience of using reflective practice in a professional capacity **(C)**, the personal motivation to adopt reflective practice to supports ones’ personal development **(M)** led to enhanced self-confidence and self-awareness **(O)**. As noted in configuration 1, previous experience of using reflective practice to support professional and personal development appeared to be the most important enabler of using the portfolio as more than a tool to record and evidence activities .

Whilst many members used reflection in some capacity, e.g. to demonstrate lessons learnt, only certain members used the portfolio as a mechanism that enabled and structured reflection and reflective learning. All three younger members were either studying, had recently completed their studies or were going back to studying; reflection formed or had formed part of their learning programme. However, it was notable that the two young men used reflection at a superficial level, primarily to help them identify skills gaps, as part of their broader commitment to enhancing their

employability. The younger woman, however, engaged in critical reflection as a means of supporting and facilitating her ability to engage in challenging PEI pursuits and gain meaningful insights.

The data suggested that it was only female forum members, especially those who had previously used reflective practice (as quoted above), who actively valued reflection and pursued it to the point when they became capable of critical reflection. When they had attained this level of reflection, they described how this process had enhanced their personal development.

I was used to being reflective in my professional life but I am retired so it had been a while since I had used these skills. I always knew that it was just a case of working to reignite my skills. I have done that and acquired new skills as well. (Early exit member 2, Female)

Acquiring active listening skills was an important personal outcome for members for a number of reasons. It helped them build and maintain relationships with fellow public forum members, had a positive effect on their behaviour in forum meetings, workshops and public engagement activities and allowed them to see how much they could learn from others if they actively listened to and focused on the speakers' message and point of view. This inspired members to be more considered in their response to others, a skill used to good effect when discussing use of health data with members of the public at public engagement events.

Collaborative working skills was an equally important outcome i.e. having learnt to employ their active listening skills, members communicated their point of view more effectively, accepted and promoted compromise, made collective decisions, became more open-minded, and successfully built and maintained functioning relationships with others. On a personal level, members felt that they also had a greater appreciation of the importance of embracing diversity of opinion, being respectful of views inconsistent with their own and valuing the skills, experiences, and contributions of others. These were all skills that they felt they could use to good effect in other public service roles.

The PIP [personal involvement portfolio] really helped me get to grips with reflecting on my own behaviour, especially in meetings. I realised that I never truly listened I was just waiting for my opportunity to speak but that meant I wasn't learning from others. That penny dropping was important because when I actually started to listen I realised how much I could learn from the other members of the forum. (Member E, Female)

Configuration 3- Valuing the portfolio as a guiding framework

When members had a positive perception of the portfolio as a guiding framework **(C)** there was a willingness to use the portfolio **(C)**. This ultimately enabled reflective practice **(M)** which enhanced reflective experiential practice, critical thinking and improved communication skills **(O)**. The enabling mechanism was that personal motivation to adopt reflective practice in order to support personal development

Self- awareness is a skill which requires work to develop and I have been encouraged and supported to develop the skills for many years. However I believe it is like any other skill – if you stop doing it or don't keep up the practice the skill becomes lazy and less well honed. So the forum has provided me with the medium to practice my skills, particularly circumspection. I haven't always got it right but reflection allows me to recognise that so I can make adjustments. (Replacement Member 1, Female)

One, individual level, contextual factor identified as facilitating this mechanism was a perception that reflective practice could be harnessed to improve or attain certain skills which could feedback into society. The desire to make a positive contribution to research, public health or society motivated many to work through the challenges of developing critical reflection skills.

I want to give something back and getting involved in this project is a great way to do that. I also think it's very important for the voice of the public to be included...and so although it has been time consuming and very hard at times I'm glad that I didn't give up on the portfolio and my attempts to be more adept at reflection!(Member H, Male)

418 Ten members (seven of whom were women) thought that the portfolio had been helpful in
419 encouraging such reflection. Face to face consultation sessions and exit interviews facilitated our
420 understanding that being more reflective was part and parcel of how most members began to
421 appreciate that the diary approach underpinning the portfolio enabled their personal development.
422 By becoming more reflective, members became more aware of aspects of their personal
423 development that they wished to enhance and made a strong commitment to learning in order to
424 progress as an individual and as part of the team. However, it was notable that for others, primarily
425 the men, the portfolio was used predominantly as a diary as a record of achievement.

426 *For me personally I've not put that much effort in or looked at it outside of the meeting*
427 *s(Member I, Male)*

428 Internalised motivation appeared to underpin the key enabling mechanisms. Five members' data
429 identified motivation for personal development achieved through reflection as the primary catalyst
430 for continued use of their portfolio. For all these member, motivated use of their portfolio related to
431 using their new skills and learning for the benefit of the project and the broader public good. For
432 those who were retired, the motivated use also related to building on their former professional
433 practice in order to continue to develop as a person outside of the workplace. For those who were
434 not retired, it also related to their personal and professional development.

435 Whilst these individual level contextual factors played an important role as enabling mechanisms,
436 societal level contextual factors also played a part. The female forum members appeared to find
437 reflection easier than their male counterparts. This was underpinned in part by previous experience
438 of using reflective practice in a professional capacity, as described earlier. Analysis of all the strands
439 of data revealed that female forum members were more motivated to use the portfolio and this was
440 enabled by prior use of reflection in a professional capacity, which meant that they valued reflective
441 practice. This prior use accelerated their competence in undertaking critical reflection and the
442 subsequent enhancement of their personal development.

Members who used the portfolio as a framework to guide their learning and development demonstrated increased self-confidence, notably in their ability to undertake tasks that were previously unfamiliar to them. In particular, these were activities associated with digital technology (N=5) and where members felt more able to assert themselves in public and professional arenas (N=4). It was in these aligned domains of personal development that members recorded the greatest impact. One member cared for her mother and was responsible for assisting with her interactions with health professionals. Previously, meetings with her mother's consultants had left the member feeling powerless and her voice ignored. Her enhanced self-confidence, greater knowledge and understanding of healthcare and the sense of authority to assert herself, enabled her to challenge her mother's consultant about her treatment. As a result, valuable new information was discussed with the consultant, who listened to and acted on the information. This led to an improved health outcome for her mother.

I definitely feel able to challenge health professionals now. In fact I have done so on a number of occasions now and they have listened to me! (Member G, Female)

Three women identified the portfolio as the most successful element of their involvement in the public forum as it had enabled them to develop personal and professional insights and encouraged additional and improved learning behaviours. This may have been achieved because the very nature of writing and critically reflecting on one's thoughts in a journal facilitates the latter's ability to understand how theory and practice inform each other, in effect acting as bridging concept or connection between theory and practice.

"Playing devil's advocate to my own theories, considering how my behaviours impacted on others. I could do this is an oral way but that only captures the moment and I need to be able to recall and revisit learning. Learning evolves and therefore needs to be reviewed. Actions implemented, theories tested, amended adopted or rejected and changes made. I

467 *can only make my learning meaningful and capable of meeting these objectives if I keep a*
468 *written record". (Member G, Female)*

469 Nearly half of the members (N=6, including four women) also reported that the portfolio was a
470 useful mechanism for cascading elements of what they learnt to other public forum members and
471 members of the broader public.

472 *I am always talking to other people about what I have learned and I find that most people*
473 *are really receptive to what I tell them and quite a few would like to learn more (Member*
474 *D, Male)*

475 However, six members thought that the portfolio was '*not at all useful*' for cascading elements of
476 what was learnt to these others. This was reported regardless of demographic characteristics such as
477 gender, age and employment status. It may be that the diary method which is predicated on a very
478 personal and private recollection of one's inner most thoughts is not conducive to the more
479 collective communication of learning to others.

480 Discussion

481
482 This realist evaluation, albeit in a small study, has shown that the use of a personal involvement
483 portfolio did enhance some of the forum members' personal development, in particular for the
484 female members. Data analysis and consideration of the three CMO configurations suggests,
485 therefore, a refined MRT that 'the use of a portfolio as a framework for learning in a public forum
486 will facilitate forum members' personal development if they value its use as a framework for
487 learning'.

488 Findings indicate that the portfolio not only supported the enhance of personal development but it
489 was also instrumental in improving the interconnectivity of outcomes i.e. the likelihood that
490 participants reported they had attained all the most commonly noted improve aspects of personal

development. The portfolio provided members with the motivation to use reflection as a means to embed learning into their daily lives, as well as in the applied work of the public forum. Equally important was its influence on how they acted and behaved in the personal realms of their lives. Those who embraced the portfolio and used it on a regular basis reported that they had become more self-assertive and felt a greater sense of agency, particularly in relation to their health and that of their significant others.

There is some evidence that such portfolios successfully prompt insights, encourage further study and improve learning because they act as a bridging concept between theory and practice, thereby aiding understanding of how theory and practice inform each other [34]. The use of portfolios in public forums is under researched; however the fact that the portfolios encouraged forum members to undertake additional study to improve their learning may be explained by similar findings reported in other sectors. For example, Beecher and colleagues reported that the use of an education based portfolio stimulated reflective practice amongst medical professionals [35]. Similarly a literature review undertaken by Mann and colleagues reported that health professionals who chose to use portfolios were already positively inclined to reflection and perceived its usefulness and value in helping them reach particular goals [36].

There was a strong gender bias in those who valued the portfolio as a tool to structure reflective practice and to share learning. Our findings suggested that women were more likely to use the portfolio because they valued reflective practice and men were most likely to use it because it provided them with a record of involvement which could be used for employment purposes and was an effective way of learning and developing both individually and for the project. However, the degree to which gender affected the members' relationship to the use of the portfolio is open to conjecture and further research is needed to investigate this. It may be related to the working environment into which the public forum was embedded. The public engagement researcher who lead the group (GH) and the other institutional public engagement leads (including MPT) were all

women. Research which explores gendered differences in the workplace suggests there is evidence that some men find it hard to admit they need development and find it difficult to self-analyse and identify weakness or areas where they could develop [37, 38]. These challenges may have been amplified by a disinclination to admit this to the female public engagement leads in this study. Concurrently, this gender biased environment may have produced social relationships which were more supportive of the use of reflection and reflective practices amongst the female forum members. Previous research also suggests that this finding may be due in part to societal processes that mean that reflective practice is more commonly associated with professions predominantly staffed by women and reflection is more commonly associated with psycho-social behaviour assigned to women [30, 37, 39, 40].

Although there have been other realist evaluations of PEI [15], this is one of the first to focus on the personal development of members of a public forum. The findings offer an appreciation of how public forums can be mobilised to enhance members' personal development. Realist evaluation is primarily concerned with clarifying causality within localised contexts [41]. Therefore, our findings do not purport to be representative or generalisable to other settings at this stage, but generate hypotheses that could be tested in future studies.

During interviews for public forum membership, the importance of maintaining the portfolio was communicated to potential members and those who seemed amenable to this were prioritised for recruitment. A prescriptive approach, which used ongoing direct instruction to scrupulously use and maintain the portfolio, was purposefully not adopted. Ascertaining whether the portfolio would support personal development required that it be adopted and maintained willingly and without pressure.

This study is important because an increasing emphasis has been placed on PEI in research [4]. PEI offers people the opportunity to, among other benefits, develop skills, broaden their horizons and (in some instances) earn money [42-44] and so these positions are highly sought after [45].

However, there are concerns that lay people recruited to PEI roles have ‘worked’ in this field for a number of years and are so ingrained in the system that they no longer offer an authentic ‘lay’ perspective [45, 46]. Ives and colleagues refer to this as the ‘professionalisation paradox’ [45]. The field of PEI therefore needs to expand who and how it recruits to PEI roles. A systematic review of frameworks designed to support PEI in research [47] grouped frameworks into five categories: power focused, priority setting, study focused, report focused and partnership focused. None of the frameworks could be categorised as having a personal development or social impact focus for the individuals who contribute to PEI in research or the broader public. However, it has been argued that personal development in PEI should be seen as incidental to the impact of PEI on the research or researchers [45], which may explain this gap.

This refined MRT offers an example of a framework which has a focus on personal development and social impact. It also offers up a model in which the ‘professionalisation paradox’ can be mitigated by broadening the appeal of PEI membership to people in society who could benefit the most from involvement in public endeavours but may not traditionally think of ‘working’ in PEI. This might ensure that forum members are drawn from a broader sector of the population and thus deliver an authentic lay perspective [45]. Our findings suggest that, if organisations involved in PEI want to recruit people with a fresh perspective and or focus on delivering around social value/impact, they should prioritise the personal benefits that involvement in PEI can bring to participants and the broader benefits that can accrue to society. These may be benefits that, for example, relate to gaining practical skills that could improve employability outside of PEI or facilitate community led regeneration initiatives.

Conclusions

This realist evaluation has shown that the use of a portfolio as a framework for learning in a public forum will facilitate forum members’ personal development if they value its use as a framework for

learning. Therefore, if an organisation wants to enhance public understanding about complex research areas such as data-intensive health research, they could potentially underpin their PEI approach with a personal involvement portfolio and combine this with a realist evaluation of its impact. This will ensure that the modified MRT identified in this study can be fully evaluated and modified further if necessary. However, regardless of which approach is adopted to underpin PEI in research, evidence from this evaluation concurs with other studies which conclude that PEI should always be underpinned by procedures which ensure that participants receive ongoing and tailored guidance and support throughout the process [45-47].

Declarations

Ethics approval and consent to participate

JH undertook the necessary checks (in accordance with guidelines provided by the National Research Ethics Service and the University of Manchester Research Ethics Committee) to confirm that the activities described here constituted public engagement and involvement and that ethical approval was not required. The National Institute for Health Research (NIHR) INVOLVE organisation advises that “Members of the public actively involved in research are acting as specialist advisors, providing valuable knowledge and expertise based on their experience of a health condition or public health concern. Therefore ethical approval is not needed for the active involvement element of the research (even when people are recruited via the NHS), where people are involved in planning or advising on research, for example helping to develop a protocol, questionnaire or information sheet, being a member of an advisory group or co-applicant.” Forum members participated in data collection and analysis as public contributors and were paid for their time.

Consent for publication

Not applicable

Availability of data and materials

Data cannot be shared as the members of the forum did not consent to this. In addition, the small numbers of forum members means there is a strong possibility that there would be content in the data that could identify individuals.

Competing interests

None

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Authors' contributions

JH - convened and ran the forum, designed study and collected data, analysed data and co-wrote the manuscript

MPT - managed the PEI at Greater Manchester Connected Health Cities, assisted with data analysis and co-wrote the manuscript

Both authors approved the final version of the manuscript

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