

An Exploration/Investigation of General Practitioners' and General Practice Nurses' Opinions on Physical Activity Promotion to their Patients in Ireland

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Abstract

Chronic disease rates are increasing globally, this is partially attributable to the global epidemic of physical inactivity. Physical activity promotion in primary care is regarded as the best approach for combating chronic disease. This study investigated the common beliefs and opinions among general practitioners and nurses on promoting physical activity to patients in Ireland. This research took a mixed-methods approach consisting of an online questionnaire (n=79) and semi-structured interviews (n=8). Lack of time, expertise, cohesiveness, referral pathways, and exercise professionals were the main barriers to physical activity promotion experienced. A small minority (7.6%) of participants were trained in exercise prescription, and 40.5% had knowledge of a local exercise professional. Furthermore, the research indicated that 70.2% of GPs and 86.4% of GP nurses did not provide an exercise referral. Physical activity promotion in primary care needs a cohesive approach. Involving an exercise professional is crucial to help facilitate to aid physical activity promotion.

Keywords: Physical Activity Promotion, Chronic Disease, Primary Care, Exercise Professionals, Referral Pathways

Abbreviation	Meaning
PA	Physical Activity
CD	Chronic Disease
GP	General Practitioners
BMI	Body Mass Index
CVD	Cardiovascular Disease
HSE	Health Service Executive
WHO	World Health Organisation

1. Introduction

Chronic diseases (CD) “tend to be of long duration and are the result of genetic, physiological, environmental and behavioural factors” [1]. CDs are also known as non-communicable diseases (NCDs). CD is the leading cause of mortality globally with increasing prevalence in all age groups, ethnicities and genders [2]. The most prevalent chronic diseases worldwide are cardiovascular disease (CVD), chronic obstructive pulmonary disease, obesity, cancer, chronic lung disease (CLD) and diabetes [3]. The incidence of CD has increased globally due to an increase

in physical inactivity as well as other variables including an ageing population and socioeconomic status. An increase in the ageing population can be attributed to the improvement in life expectancy since the mid-nineteenth century, due to success in averting premature deaths [4].

Physical inactivity is a modern global pandemic that causes more than 5 million deaths annually and is a significant risk factor for morbidity and early mortality [5]. Notably, physically active individuals compared to inactive are at a decreased risk of all-

cause mortality by 30-35%, emphasising the need for encouraging PA [6]. Although the importance of PA is emphasised throughout the literature, it is astonishing that in Ireland only 31.3% of adults and 34% of older persons (50+ years) of both sexes fulfil the recommended amount of PA. Additionally, just 19% of children (10-12 years) and only 12% of adolescents (12-18 years) of both sexes reach their PA recommendations [7].

In the European Union, the cost of CD is expected to increase in all scenarios even in the best-case scenario. In the best-case scenario, the EU can save €605 billion by 2050 compared to business as usual; on the other hand, excess CD expenditure is estimated to reach €350 billion in the worst-case scenario [8]. In Ireland, 30% of the population with CD accounts for 90% of overall healthcare costs [9]. The anticipated cost of overweight and obesity in 2009 was €1.13 billion, including over €400 million in direct healthcare expenditures, and is expected to rise to €5.4 billion by 2030 if no policy interventions are made [10]. There is no denying the impact of CD on our healthcare system. The annual cost of physical inactivity in Ireland is estimated to be over €1.5 billion [9].

PA promotion has been deemed as the best approach for reducing the effects of CD, therefore its implementation at the primary care level is essential for enhancing the results of PA interventions [11]. In the primary setting, the role of the general practitioner (GP) and the general practice nurse play a part in promoting PA as one in four people would become more active if urged to do so by their GP or nurse. Thus, demonstrating the importance of these professionals' role [12].

Some research indicates that GPs believe the burden of PA promotion has been "*dumped on them*" since they already have demanding workloads and introducing PA promotion may overtax a resource that is already almost at capacity. Instead, they propose a greater degree of collaboration between health and exercise professionals to promote PA [13]. Alongside GPs and GP nurses facing an increased workload, there are other barriers and implementation issues when it comes to promoting PA which will be stated below. In Australia, there were 1.44 referrals for every 1,000 GP-patient encounters in 2015–16, a fourfold increase from 2009–10 [14]. Additionally, this study emphasised the need of educating GPs about the role of exercise physiologists in the prevention and treatment of CD [14].

One of the most common barriers GPs and GP nurses encountered was a lack of time due to the heavy workload demands and limited time with patients [15]. Therefore a collaborative approach is necessary to promote PA as most of their time will be dedicated to identifying and helping solve the problem [13]. GPs and GP nurses continue to face the same barriers, which have been repeatedly recognised in research over the past 30 years. Therefore, for PA promotion to be effective in primary settings and aid in the fight against the epidemic of CD both in Ireland and globally [13].

1. Methods

1.1. Research Question and Sampling Method

The study's research question sought to '*Determine the factors that affect PA promotion among General Practitioners and General Practice nurses in the management of chronic disease in Ireland*' A purposive sampling method was utilised initially, which relies on the researcher's judgment to select potential participants who fit the inclusion criteria [16].

The inclusion criteria were actively practicing GPs' or GP nurses in Ireland. The Health Service Executive (HSE) directory was used by the first author to gather emails from potential participants. Consequently, suitable participants were contacted using this comprehensive registry of public health services.

Two gatekeepers were contacted to help with recruitment, : one for the GPs and one from the Irish General Practice Nurses Educational Association. In addition, snowball sampling was incorporated into the recruiting process, thus increasing the exposure of the study to recruit additional participants.

2. Study Design

A mixed method was chosen as the approach that would best address the research question. Questionnaires and semi-structured interviews were the data collection tools that were used to gather both qualitative and quantitative data. In a healthcare setting, semi-structured interviews are more frequently used since they are adaptable and flexible [17].

3. Data Collection

The online questionnaire received a total of 79 responses, and 29 people volunteered for interviews. The follow-up email resulted in a response rate of 28%, therefore 8 participants were interviewed.

The questionnaire used in this study was adopted based on standardised questionnaires and topic guides used in prior studies with a similar population. The questionnaire had elements similar to previous questionnaires, such as demographics, beliefs, and behaviours [18]. The questionnaire collected both quantitative and qualitative data.

An interview is a method for gathering qualitative data that enables the researcher to explore the participant's perspectives on the research question in greater depth [19]. The semi-structured interviews were on a one-to-one basis either conducted over the telephone or via zoom.

4. Data Analyses

Statistical Package for the Social Sciences (SPSS) version 17 was used to analyse the quantitative data gathered from the questionnaire. Content analysis guided analysis of the qualitative data from the questionnaire's open questions [21]. Analysis of the interview data was managed in NVivo 12 and guided by template analysis, an approach to thematic analysis [21], *using a priori* themes of barriers, awareness and implementation.

5. Results

A total of 71 participants (22 practice nurses and 57 GPs) completed the questionnaire. Eight (?? Nurses/GPs) were interviewed. The three themes of barriers, awareness, and implementation are used to demonstrate the results in relation to the promotion of physical activity in primary care.

6. Barriers

Time was a major concern related to exercise prescription expressed throughout the interviews. Time constraints and lack thereof are a significant impediment for these professionals, stating *"it's a service that already exists and is overstretched and expected to deliver"*. The time these professionals have is limited, and *"every additional two-three minute is a barrier"*; their time is limited, and a majority of that time is used to identify and address a specific condition. In the interviews, the perception of responsibility for exercise prescription among professionals is inconsistent; for some GPs, it is neither their responsibility nor their role. Conversely, other GPs do it because *"there isn't someone better qualified to take the patient"*. While other GPs and GP nurses believe they are *"ideally placed"* to promote PA. In addition, the interviewees did not believe they have the requisite skill set or competence to cope with the *"complexity"* inherent to general practice.

The most important finding from the content analysis was also lack of time or time limitations, which represents a major barrier because PA promotion requires time to be carried out effectively. Alongside time, a lack of training is clear in the quantitative data, as only 7.6% of the sample was trained in exercise prescription. Interestingly, 92.4% of the sample would take advantage of this training if it were made available.

A lack of resources, such as referral pathways, funding, and cohesiveness, was a prevalent theme across the interviews. There is no connection between the private sector and gyms for these practitioners to refer to. Referral to a private physiotherapist tends to be *"only on a rehabilitation basis"* and there appear to be limited pathways locally, resulting in a lack of referral and hence poor exercise reinforcement. When referring patients for exercise, physiotherapists were the most common pathway, however, some GPs stated, *"that it's not practical"* and that referring everyone who needed exercise *"would break the system"*.

The content analysis highlighted some of the most frequent pathways/ programs used such as Croí, ExWell, HSE program, heart-wise, GP referral program, clubs, park run and sports partnership programs. As previously stated, physiotherapists were the most frequently mentioned referral pathway in the interviews,

which is supported by the results of the content analysis, which revealed that physiotherapists were the most frequently mentioned referral pathway ahead of personal trainers and cardiac rehabilitation. Despite this, 59.5% of the sample was unaware of a local exercise professional, and only 46.8% were aware of local exercise programs.

The lack of previously mentioned links and the primary care team's lack of cohesiveness were both identified in the interviews as major barriers. It's challenging to promote and support PA without these referral links. When it comes to patient care, cohesiveness is a crucial aspect of efficacy and outcome quality. Throughout the interviews, the situation seems *"fragmented"* and that *"there's a little bit of everything going on all over the place, but it's not really connecting them with us."* Integrating all the data cohesiveness is a barrier that unites them all; without a link, the referral pathways are meaningless, thus they must be accessible to practitioners and have feedback to produce the best results.

The patient's ability, perceptions and motivation to exercise stood as another hurdle for these practitioners when it comes to exercise prescription and PA promotion. A cohesive team approach with direct referrals is crucial to achieving the best outcome because they *"can put up more barriers"* which highlights the complexity of behaviour change, which goes much beyond a few minutes in a consultation. The content analysis revealed that the patient's motivation, expectations, and lack of awareness were significant barriers to these practitioners' adoption of exercise prescriptions and PA promotion. These quantitative findings are affirmed by the fact that 63.6% of GP nurses and 61.4% of GPs do not prescribe exercise which may be attributable to the patient's pivotal role in the relationship.

Along with the role that the patient plays the participants expressed concerns around liability and having *"a niggle about insurance in the back of my mind"*. The participants need to be careful to whom they refer patients as they have a *"duty of care to their patients"*. Since practitioners have a duty of care and personal trainers are an *"unregulated profession and that brings a legal risk to me"*, therefore leads to them being cautious about whom they refer their patients to. This consolidates with the previously mentioned content analysis since patients

were more likely to be referred to physiotherapists than to personal trainers, which may indicate that participants feel more secure around healthcare professionals than they do with a personal trainer, which could be attributed to the quality of care or liability risk.

Quantitative Findings		Pillar		Qualitative findings
1	2	3	2	1
Lack of time		Barriers	<u>Lack of time</u>	"I don't think we have the time" (P1, GP) "more time, I suppose, if I had more time in the day" (P3, GP Nurse) "I don't have the time and it wouldn't be a good use of my time" (P7, GP) "it's a service that already exists and is overstretched and expected to deliver" (P2, GP) "every additional two-three minute is a barrier" (P7, GP)
			-	The content analysis outlined that time limitations were the most common barrier identified.
Lack of exercise prescription training.			<u>Sense of Responsibility</u>	"It's not my role look I'm far too busy like you just doing so much stuff in my place that I can't but what I can do, and what I do is I do emphasise the importance of exercise" (P5, GP)
92.4% of this sample expressed interest in availing of this training if it was provided.			<u>Expertise</u>	"I wouldn't feel I would have the expertise to give them in-depth exercises to do or anything like that you know that I'd be able to monitor whether they're doing it right or anything like that" (P5, GP Nurse)
			-	"Definitely in prescribing because of expertise" (P2, GP)
			<u>No other referral options</u>	"because there isn't someone better qualified to take the patient" (P8, GP)
			-	"I can do the very basic broad outline but, you need to specialists that that area" (P4, GP Nurse)
Only 7.6% of the sample are trained in exercise prescription.			<u>Lack of training</u>	"we don't get specific training in exercise prescription" (P8, GP)

		<p>The content analysis revealed that neither GPs nor GP nurses had any correlation between years in practise and exercise prescription training. This indicates that this type of training is not readily available.</p>
<p>Resources and cohesiveness</p> <p>Only 46% of the sample was aware of a local exercise programme, while only 40% knew of a local exercise specialist.</p> <p>86.4% of GP nurses do not provide a exercise referral, additionally, 70.2% of GPs do not provide exercise referral</p> <p>There was no statistical significant (0.462) correlation between GPs and availability of local resources (0.099)</p>		<p>-</p> <p><u>Resources and no referral option</u></p> <p>it's more just advice I don't have like a formal referral pathway (P1, GP)</p> <p>"I don't think we can always offload it to others, you know, or at least have a direct pathway when we are offloading is important. Because we lose them so quickly if we don't have something instant" (P6, GP nurse)</p> <p>"not really working in conjunction with us it's always a referral out of our setting" (P4, GP nurse)</p> <p><u>Cohesiveness</u></p> <p><u>Resources and no referral option</u></p> <p>"I would recommend some people to go to a physiotherapist there isn't any exercise program person know it would be great if there was but there isn't" (P3, GP nurse)</p> <p>"physios but that's not in reality that's not practical, we can refer them to physios if it's just for you know lifestyle changes it's not going to work too hard enough to get for people with problems" (P6, GP nurse)</p> <p>"physios are already like for like they have enough on their plate when when you're kind of sending them injuries" (P8, GP)</p> <p><u>Funding</u></p> <p>"I suppose the lack of actual funding from the public system to actually have these like, for example. There is publicly funded counsellors there is publicly funded like physios occupational therapy speech and language therapist but there's no probably that i'm aware of any way no publicly funded like exercise therapists or people to advise patients that have to exercise" (P8, GP)</p>

<p>There was no statistical significant (0.963) correlation between GP nurses and availability of local resources (-0.011)</p> <p>64.6% of sample stated that there were local resources to promote/ encourage PA</p>		<p>"There is definitely room for improvement, because, again I think it's the whole thing of where most of the money goes into secondary tertiary care rather than primary and, of course if you the old adage of prevention is better than cure, have definitely more room for improvement there" (P1, GP)</p> <p>"in a hard-pressed fiscal economy it's often hard to find the money for that and dedicate the resources" (P7, GP)</p> <p><u>Links</u></p> <p>"kind of the links with people, and you know just more cohesive" (P4, GP nurse)</p> <p><u>Cohesiveness</u></p> <p>"I just feel this very fragmented there's there's a bit of everything going on all over the place, but it's not really connecting them with us" (P4, GP nurse)</p> <p>"Personally, I'm not involved in one, but I don't really hear anything positive in that sort of sense for people involved in primary care teams have actually benefited by having extra pairs of hands, you know, to, to actually do stuff" (P7, GP)</p> <p><u>Cost</u></p> <p>"cost can be such a big factor really for some people, if they want to do a different exercise, other than walking" (P3, GP)</p> <p>"the cost to the patient really like the cost me is minuscule really in terms of my time making recommendations" (P7, GP)</p>
		<p>The content analysis revealed that physiotherapists were the most prevalent referral source, supporting the qualitative findings from the interviews. In addition, the most apparent local resources utilised to promote physical exercise were the Mardyke, private gyms, sports, and leisure centres.</p>

<p>This data represents the barriers in relation to the role of the patient and liability</p> <p>36.4% of GP nurses provide a exercise prescription. 38.6% of GPs provide a exercise prescription could be due PA being multifactorial</p>		<p><u>Transport/locality</u></p> <p>"it means the patient has to get into their car and drive for me they'll have to drive half an hour 45 minutes 40 minutes" (P5, GP)</p> <p><u>Patient motivation</u></p> <p>"we tell them everything that they you know we think they need to know, but when they leave our room they haven't been motivated in their 40s at this stage, you know they're not going to do it on their own" (P6, GP nurse)</p> <p>"patients part of your motivation really" (P3, GP nurse)</p> <p>"some people are just not motivated and don't like exercise at all and it's there a difficult group to get around" (P3,GP nurse)</p> <p><u>Family influence/patterns of sedentary behaviours</u></p> <p>"for example, if they're just used to and the entire family are used to coming in sitting at home after dinner I'm just watching soaps and that's their lifestyle for years, it takes a while to actually get them motivation have to come off the cell phones do something" (P1, GP)</p> <p><u>Patients choice</u></p> <p>"we can only try to encourage somebody we can't it's it's their choice" (P3, GP nurse)</p>
		<p><u>Addition of new barriers</u></p> <p>"so basically they put a barrier, sometimes for themselves, which of course we try and get around, but sometimes, of course, can put up more barriers" (P1, GP)</p> <p>"terms of medical, legal liability if I refer someone to another healthcare professional and that have Registered healthcare professionals like a physio dietitian or a doctor and that professional screws up, they are responsible for their own actions. If I refer someone to say</p>

<p>Only 40.5% of the sample were aware of exercise professionals in their local area</p>		<p><u>Liability</u></p> <p>inverted commas, a a quack not calling personal trainers, but, but if I refer somebody I have a duty of care of my patients when they attend them, so if I refer someone to a personal trainer and they suffer an injury, I may be liable for that" (P7, GP)</p> <p>"there's always a niggle about insurance in the back of my mind as well" (P6, GP nurse)</p> <p>-</p> <p>"then we had to stop insurance becoming an issue" (P6, GP nurse)</p> <p>-</p> <p><u>Uncertainty about exercise specialist</u></p> <p>"you have someone accredited doing it rather than some guy who just does a load of gym work and says he's a personal trainer so that's The fear is if someone who doesn't really know what he's talking about for like a 70-year-old woman to know" (P8, GP)</p>
		<p>The content analysis supports these findings from the interviews by identifying barriers such as patient motivation, expectations, and lack of patient knowledge. This may be the reason why these practitioners refer patients to other healthcare professionals, such as physiotherapists, who would be liable for their actions.</p>

Legend:

Table 1. is an integration of qualitative and quantitative data pertaining to barriers. The left side of the table contains the quantitative data from the questionnaires. The central area contains the main topic, while the sub-themes are located to the right. The qualitative data from the interviews are presented in the right column of the table, together with the content analysis from the questionnaire in the blue-shaded portion.

Table 1: Pillar Integration of the data for Barriers

7. Awareness

GPs and GP nurses interviewed were in agreement that they were “ideally placed” to promote and prescribe exercise. Despite the fact that some participants see that general practice as a significant chance to promote PA because it is “the best medicine and it’s free you know exercise” other qualitative findings in this study contradict this sense of responsibility as previously stated. Exercise was “undervalued” because it “is perceived as free and not necessarily easy for people”, even though they acknowledged this they understand that lifestyle modifications are needed in a majority of their patients. A fascinating statement that neatly unifies all the interviews in relation to awareness is this: “I think if exercise was a medicine that was patented by one of the big pharma companies, I think we’d be selling a lot more of it”. Furthermore, the impact exercise can have on lower CD rates and the participant’s statement that “prevention is better than cure” support the idea that exercise and lifestyle changes can be used to prevent CD and improve general health.

Since all respondents (100%) to the questionnaires agreed that exercise can be utilised as a prophylactic and treatment for comorbidities, the quantitative findings corroborate the findings from the interviews. The quantitative findings illustrated that 83.2% on average of their patients would benefit from exercise, the perspective among the participants is that exercise is “undervalued” by patients as it is free and perceived as not necessary.

8. Implementation

Cohesiveness and Funding

Cohesiveness or lack thereof was previously addressed in relation to barriers, but this time cohesiveness will clarify participant ideas/concepts for deliberate implementation. Although the barrier of creditability and liability may be a barrier to this adoption of PA

promotion, some participants said, “It doesn’t have to be a health professional after that I think if you have a structured form of exercise it doesn’t have to be a health professional if they’re sent from us”.

Another participant said that a social prescriber, a link worker with access to health and exercise professionals in the community, can facilitate with the GPs and GP nurses to “signpost appropriately” increasing the likelihood of a successful outcome as a result of a direct referral. The social prescriber’s role is to be aware of who and what is present in local communities to forge connections, which is currently being done in Ireland, albeit “it’s actually not really an operation yet it’s very sporadic around the country”. As a result, a social prescriber’s role would be crucial in establishing relationships and fostering greater cohesiveness, however, participant 4 also noted that “establishing the links would be the longest bit”. The lack of connections, referrals, and direct pathways was a key barrier in the interviews, and the idea of the social prescriber may help resolve these issues.

One participant offered an intriguing insight “publicly funded counsellors there is publicly funded like physios occupational therapy speech and language therapist but there’s no probably that I’m aware of any way no publicly funded like exercise therapists or people to advise patients that have to exercise”. Despite the wealth of research on the benefits of exercise. The content analysis links in with the previous section since the most frequently mentioned implementation assistance was having direct referral pathways free or at a low cost to the patient to prevent cost from being a barrier to completion of referral. As illustrated below in Figure 1 only 29.8% of GPs and 13.6% of GP nurses made exercise referrals, demonstrating the absence of cohesiveness and connections, according to the quantitative findings.

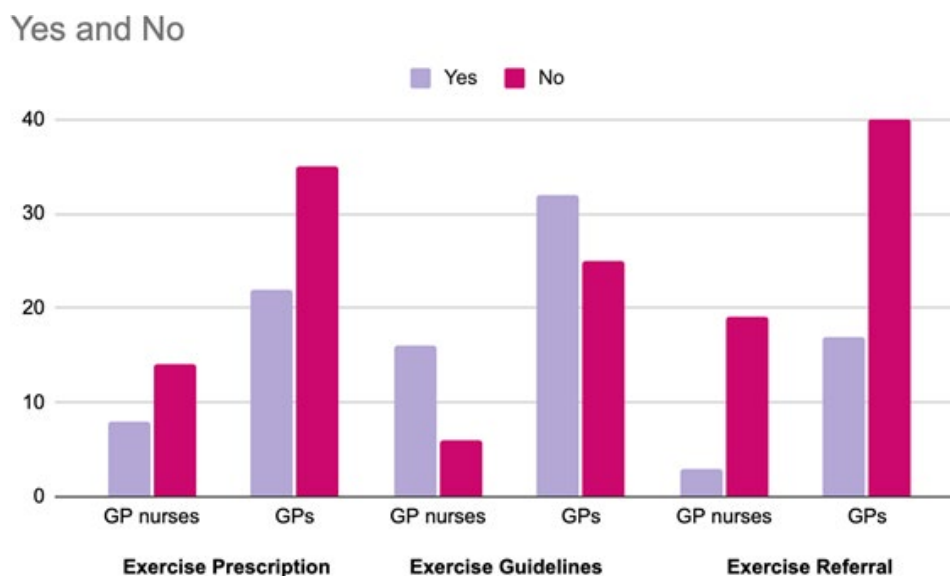


Figure 1: Current Implementation of exercise prescription, guidelines and referral.

Figure 1 Legend

As seen in figure 1 on the y-axis is the number of the sample. 36.4% (N=8) of GP nurses and 38.6% (n=22) of GPs provide and exercise prescription. 72.7% (n=16) of GP nurses and 56.14% (N=32) of GPs provide exercise guidelines and 86.4% (n=19) of GP nurses and 70.2% (n=40) of GPs do not provide exercise referral.

9. Exercise Professionals

The recognition of an exercise professional or specialist to assist with the successful implementation of PA promotion was a prevalent topic throughout the interviews, as one participant stated: "you lack the specific follow up of kind of in starting them on a regime". Ultimately missing out on an opportunity due to a lack of credible exercise professionals and pathways. In order to fulfil the duty of care owed to patients, the exercise specialist and referral pathway must be reliable and of high quality, as described in greater detail in the liability- related barriers above. Although assurance must be provided to ensure the quality of care in primary care, the role of exercise specialists is acknowledged; participant 2 states that the role is "a recognised specialist field"; supporting this, participants state that it is not their background and that an exercise specialist is best suited to address the PA promotion.

The content analysis corroborates the findings of the interviews,

as the second most common response to aid in the implementation of PA promotion was an exercise specialist. This, in addition to the most prevalent answer, referral pathways, can enhance the implementation of PA in Irish primary care settings. These patterns are supported by the quantitative findings, which indicate that 61.4% of GPs and 63.6% of GP nurses do not provide exercise referrals. In addition, only 40.5% of the sample was aware of local exercise professionals and 46.8% were aware of a local exercise programme, indicating that additional referral pathways and exercise professionals are required to improve PA implementation. Due to their lack of exercise competence, these practitioners are more likely to issue exercise guidelines (56.14 % of GPs and 72.77 % of GP nurses) as opposed to exercise prescriptions (38.6 % of GPs and 36.4 % of GP nurses).

Purposed Ideal Referral Procedure

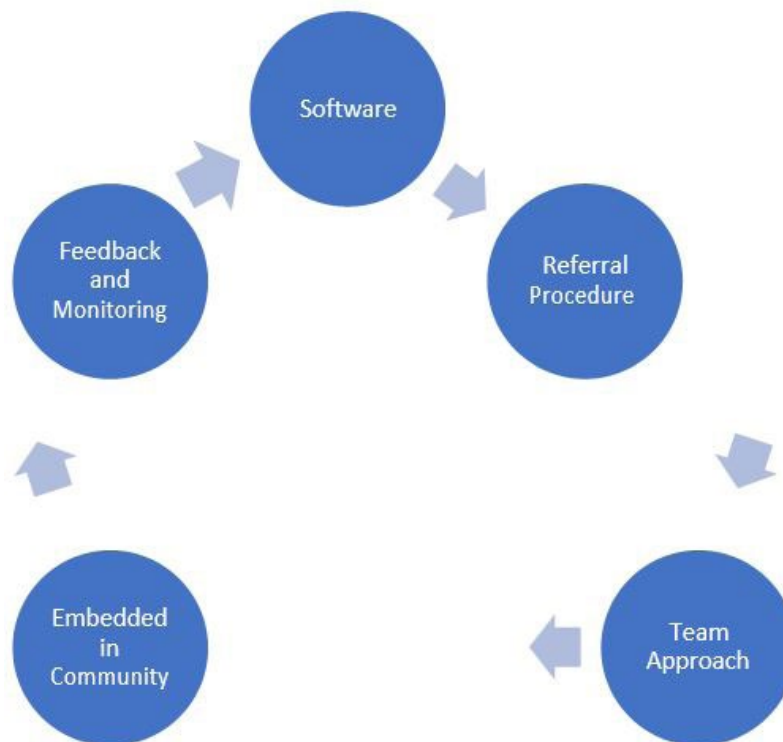


Figure 2: Ideal Referral Procedure

Figure 2. depicts the ideal referral procedure, as described by participants in the interviews and questionnaires. The referral procedure must be incorporated into the participants' software with a quick-to-implement electronic referral system. Effectively promoting physical exercise will involve a community-wide collaborative effort. Consistent feedback and monitoring will be offered to practitioners, albeit it will be brief with the key patient outcomes.

Quantitative Findings		Pillar		Qualitative Findings
1	2	3	2	1
<p>This data represents the current use of PA and exercise promotion</p>	<p>64.6% of the sample reported knowledge of local resources that promote or encourage PA.</p>	<p>Implementation</p>	<p><u>Resources</u></p> <p>"the infrastructure is there now takes a bit of imagination, as you say, Community halls and things like that, so there certainly available" (P7, GP)</p> <p>"The beauty, with the CDM program that we you know... um, the way I we run it, I will be the link nurse, so I will build up a relationship, hopefully with these people over the next couple years and they get a Bi-annual visit, you know so by just introducing it and then going back and seeing how are they how they're getting on" (P4, GP nurse)</p> <p>"Croí I know have a kind of a rehab program as well, but they also I think I've kind of expanded into encouraging exercise from the cardiovascular prevention point of view" (P1, GP)</p> <p>"Well, if they're old, I find something the ExWell, seems a very palatable version to get people going to do nothing. They, don't feel threatened by it" (P2,GP)</p> <p><u>Programme</u></p>	<p>"I always say that the walking is free and the track, we can use the track" (P3, GP nurse)</p>
	<p>46.8% of the sample was unaware of local fitness programmes to which they may refer patients.</p>		<p><u>Accessibility</u></p>	<p>The content analysis illustrated the main organisation and programmes that currently promote PA such as Croí, ExWell Medical, prevention programme, clubs, health link, chronic disease management programme and opportunistic case finding.</p>

<p>This data represents implementation issues and suggestions</p> <p>The sample indicated that if the specified resources were made available, they would be more likely to implement PA promotion and exercise. In this sample, the likelihood of implementation improved from 45.6% before the resource was supplied to 72.2% after the resource was provided. In addition, there was a 21.5% decline in the selection of the lower range of the Likert scale.</p> <p>72.7% of GP nurses and 56.14% of GPs provide exercise guidelines</p>		<p><u>Exercise Professional</u></p> <p>"It doesn't have to be a health professional after that I think if you have a structured form of exercise it doesn't have to be a health professional if they're sent from us" (P6, GP nurse)</p> <p>"like it doesn't have to be a health professional is its an exercise specialist or, somebody who has done some training in sports and fitness I guess. Someone who would notice the parameters for safety" (P6 GP nurse)</p> <p>"I prefer to have an exercise specialist or a physio or somebody that that that's their background" (P4, GP nurse)</p> <p><u>Standard</u></p> <p>"you do need some sort of registration and standard-setting for that I would need that assurance if I was going to refer, some people people to it" (P5, GP)</p> <p>"I do think it's an important role for for a GP um but I suppose like you lack the specific follow up of kind of in starting them on a regime" (P8, GP)</p>
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70.2% of GPs and 86.4% of GP nurses do not provide an exercise referral.

Only 7.6% of the sample are trained in exercise prescription. As a result of this and other barriers only 38.6% of GPs and 36.4% of GP nurses provide and exercise prescription to their patients

"I need to be careful, who, to whom I remake referrals formally make referrals you know" (P7, GP)

"standardised referral with and we give some additional information, but you know, like it has to be like it's not my job to tell an exercise-trained professional what a person's exercise capacities is and like you know, essentially" (P7, GP)

Cohesiveness

"in conjunction with the gym would actually liaise with one of the structures there to do a program basically rather than just writing out the gym wondering what to do, because without a structure of a waste of time" (P1, GP)

"if I had a HSE exercise program I would absolutely use it" (P7, GP)

Options and funding

"So if you had something like that were like maybe even if there was a you could take the class-based box or you could take an individual exercise Program. That within kind of six or eight weeks they'd be called and seen and get there a few sessions and then discharge the way doing doing whatever and I think that would be very useful either on a fully funded or partially funded basis" (P8, GP)

"if you're prescribing exercise you're only as good as your patient, so you might tell them that you need to keep your heart rate under 150 or something like that, after after certain event or whatever, but they like, you have to trust them to be able to do this and if we're not supervised, they could do something totally strange or that you wouldn't recommend you know, so I suppose there's always a little bit of uncertainty, then" (P8, GP)

		<p><u>Link worker</u></p> <p>"social prescribing and I would say the PA come in there that the social prescriber link worker would have all the access to the physical specialist in an area, so that we could direct them properly" (P4, GP nurse)</p>
		<p>The content analysis compiled all of the questionnaire data to determine how to implement PA promotion, such as exercise professionals, gym accepts referrals, local exercise classes, leaflets/guidelines, team buy-in, outline plan, and review.</p>

Table 2: Pillar Integration of the data for Implementation

Legend:

Table 2. The qualitative and quantitative data regarding the implementation of physical activity are integrated in Table 2. The left side of the table contains the quantitative data from the questionnaires. The central area contains the main topic, while the sub-themes are located to the right. The qualitative data from the interviews are located in the right column of the table, along with the content analysis from the questionnaire in the blue-shaded portion.

10. Discussion

One of the most prominent barriers faced by GPs and GP nurses is a lack of time due to high workload demands and limited patient contact [15]. The lack of time was a major theme in the qualitative data; the reason for such a lack of time is that these health professionals have limited time with their patients, making every additional task a barrier. In addition, as stated by Buckley et al., (2022), GPs will spend the majority of their time identifying and assisting with the specific problem, despite the fact that PA promotion is multifactorial and may not necessarily align with their patient's beliefs or expectations, resulting in a lack of or poor outcomes for PA promotion in primary care settings [13]. This lack of time raises questions about the responsibility of PA promotion expected from these practitioners, as the researcher found that this sample feels like "it's a service that already exists and is overstretched and expected to deliver" which is similar to Buckley et al., (2022) statement that the responsibility of PA promotion has been "dumped on them" [13]. There is no disputing that PA increases is hugely advantageous with several benefits for a population's health, CD risk and healthcare cost point of view as noted by the Royal College of Physicians of Ireland (2017) that 30% of the population with CD accounts for 90% of overall healthcare costs which is a startling statistic both from a cost and health perspective in Ireland [9].

A lack of expertise in exercise and a lack of time are just two of the barriers that these practitioners face, prompting the question of what their role should be. Given that Chatterjee et al., (2017) highlighted the importance of GPs and nurses in advising patients to engage in PA, as one in four would become more physically

active if advised to do so by these professionals, thus suggesting they may have a role to play [12]. In this sample, some participants felt it was not their responsibility, while others believed they do have a role to play because they believe primary care is an ideal setting to address physical inactivity and the relationship they've built with their patients enables them to exert greater influence on their behaviour. Although Buckley et al., (2022) found that GPs feel like PA promotion has been "dumped on them", this study also identified a sense of responsibility but that is in terms of time as "It's not my role look I'm far too busy like you just doing so much stuff in my place that I can't but what I can do, and what I do is I do emphasise the importance of exercise". Whilst similar to Buckley et al., (2022), this research demonstrates that they believe they have a duty to "emphasise the importance of exercise "; consequently, their function may be to promote PA by referral [13]. The concept of referral leads to another barrier as only 46.8% of the sample knew about local exercise programmes and only 40.5% of the sample knew of an exercise professional therefore highlighting the issue of lack of referral pathways in Ireland. Interestingly 64.6% of the sample stated they have local resources available to promote PA which may suggest issuing lies with a lack of exercise professionals and referral pathways. As indicated by Woods et al., (2016) through the PA pathways in healthcare models, Ireland is attempting to advance and implement policies in the right direction, yet this could fail due to the absence of referral pathways and exercise professionals. These practitioners are essential to the successful execution of PA promotion in Ireland. As evidenced by programmes such as Croí, ExWell, HSE programme, heart-wise, GP referral programme, preventative programme, chronic disease management programme, and opportunistic case findings.

Addressing these barriers may seem straightforward but it is far from it, as there is a lack of referral links and exercise professionals, once these are attained there can be a lack of cohesiveness that this study showed. This study demonstrated the need for an increase in exercise professionals and referral pathways, Ireland is making progress but is "fragmented" and "there's a bit of everything going on all over the place, but it's not really connecting them with us" and a "feedback loop" are all essential to effectively promote PA. Ultimately, the integration of exercise professionals into primary care settings may be required, as Lion et al., (2018) have shown that PA promotion is the most cost-effective strategy for addressing the burden of CD in primary care [11]. The addition of these exercise professionals leads to the most desirable outcomes as they have the expertise to individualise programmes for each individual. Therefore, the integration and referral to exercise professionals into primary care are acknowledged as a crucial aspect. However, this integration of exercise professionals relies heavily on the confidence of these practitioners in referring to them, this study demonstrates that there is a degree of uncertainty and assurance as personal trainers are an "unregulated profession" that poses a liability risk for GPs and GP nurses. Additionally, these healthcare professionals have a duty of care to their patients and the risk associated with an unregulated profession may be too great. Considering the impact that physical inactivity has on CD rates and general health, the exclusion of exercise professionals from the HSE directory may be an area to highlight. The directory lists 26 health and social care professionals (Health Service Executive, 2022), and surprisingly exercise physiologists are not included. In primary care settings in Ireland, physiotherapists are the most common referral pathway for exercise promotion/prescription which could be attributed to the exclusion of exercise professionals from the HSE directory as physiotherapists deal with disease and illness rather than general health.

The awareness regarding PA promotion is evident among GPs and GP nurses as they stated that on average 83.2% of their patients would benefit from PA, similar to Schwartz et al., (2019) who outlined the myriad of benefits of PA in reducing the risk of CD and minimisation of the risks associated with sedentary behaviours which are become increasingly prevalent in today's society [5]. In this study's content analysis and interviews, 100% of the sample acknowledged that PA can be used as a prophylactic and treatment for CD, supporting the findings of Schwartz et al. (2019) [5].

Findings from the Royal College of Physicians of Ireland (2017), such as the annual expenditure of €1.5 billion on physical inactivity and the proportion of 30% of the Irish population with CD that accounts for 90% of total healthcare expenses, reinforce the need for investment in this area [9]. Reimers et al. (2012) discovered that physically active individuals reduce the risk of all-cause mortality by 30-35% compared to physically inactive individuals, which is a worrisome conclusion given that physical inactivity costs Ireland €1.5 billion annually [6].

The incorporation of PA promotion into primary care is a crucial component for enhancing the quality of care in Ireland and reducing

the prevalence of CD. To effectively deploy PA promotion in primary care settings, the barriers must be appropriately addressed. The researcher observed that 38.2% of GPs and 36.4% of GP nurses provide an exercise prescription, however, both groups were more likely to provide exercise guidelines, with 56.14% of GPs and 72.7% of GP nurses providing exercise guidelines. This may be attributable to the fact that exercise guidelines are less planned/structured, requiring less expertise, and because practitioners are not prescribing the exercise, the issue of liability may be diminished, resulting in a greater implementation of exercise guidelines.

Only 13.6% of GP nurses and 29.8% of GPs make exercise referrals, which seems to be the most appropriate alternative, and both O'Regan et al., (2021) and this study underlined the persistent repeating barriers of lack of time, education, and resources [15]. In this study, the lack of direct referral pathways constituted a significant barrier to offloading patients in order to promote PA successfully; without these referral links, it is difficult to promote PA. Significantly, Craike et al., (2019) highlighted the importance of the role of exercise physiologists in the prevention and treatment of CD in the primary care system in Australia [14]. As there was a fourfold increase in referrals to exercise physiologists over the past five years in 2016. This increase in Australia's recognition of the relevance of exercise physiologists in primary care has resulted in annual well-being improvements of US\$7967 for individuals with diabetes and US\$11847 for individuals with CVD. This study showed that on 40.5% of participants had knowledge of exercise professionals which included physiotherapists and not solely an exercise specialist. The United Kingdom is currently creating a plan to establish clinical exercise physiologists as qualified healthcare professionals. If this were adopted in Ireland, a number of barriers, including liability, time, and cohesion, would be overcome in order to effectively combat CD. Ultimately, the lack of referrals and referral pathways to other professionals is a hindrance to promoting and supporting PA in Ireland.

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