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Introduction

Worldwide prevalence of prescription opioid use has tripled since 1991, the greatest increases occurring in the USA and Canada. [1-3] Recent UK studies have highlighted an increase in the prescribing of opioids in primary care, most prominent in areas of social deprivation.[4-7] These patterns have emerged despite lack of evidence of efficacy of opioids when used in the long-term but clear evidence of dose-dependent harmful outcomes for patients.[8]

Prescribing medication, regardless of the condition being managed, is a complex process as it requires the GP to consolidate evidence based recommendations with the patient's presenting complaint and co-morbidities to recommend a course of action having reached a consensus with the patient.[9] GP-patient encounters centred on the prescribing of opioids are particularly complex given the potential for adverse outcomes from these medications and the understandable concern about potentially inappropriate use and addiction. However, being overly-cautious can result in the under-prescribing of analgesics particularly in medically complicated patients. This can lead to uncontrolled pain with a negative impact on quality of life.[10]

Several qualitative studies have indicated that the prescribing of opioids for chronic non-malignant pain (CNMP) in primary care is influenced by the resources available to the GP in addition to knowledge, experience and beliefs of the prescriber. For instance, ease of access to physiotherapy or pain specialists, perceived or actual risk of opioid related side-effects, concerns about misuse of opioids and professional experience in the management of CNMP are factors that alone or in combination influence the prescribing decision-making process. [11-13] These issues may be further compounded by a sense of scrutiny from professional authorities which may further influence the GPs approach to opioid prescribing. [14]

As most opioids prescriptions are initiated by a patient's GP, it is essential that we understand the dynamics of a GP-patient consultation which leads to the prescribing decision. [7] The aim of this study is to identify and synthesize the qualitative literature on the factors influencing the nature and extent of opioid prescribing in CNMP by GPs in primary care. The secondary aim is to develop a theoretical model that describes the relationship between factors influencing prescribing of opioids for CNMP by GPs.

Method

A systematic search was conducted to identify eligible studies followed by a thematic synthesis of the included studies. Thematic synthesis involves the analysis of primary qualitative literature and provides a framework to integrate findings.[15] This is reported using the 'Enhancing transparency in reporting the synthesis of qualitative research: the ENTREQ statement', a 21 item checklist.[16] The systematic review was registered with the International Prospective Register of Systematic Reviews (PROSPERO), registration number CRD42017060017. Ethics approval was not required as the study did not involve human subjects. The completed ENTREQ and PRISMA statements are provided in Appendix 1 and 2 respectively.

Search Strategy

A search strategy was devised to identify all available studies on the topic of GPs prescribing opioids for CNMP. The inclusion criteria for this review were that studies: a) document GP's experiences and behaviours relating to prescribing opioids for CNMP in a primary care setting; b) were published in peer-reviewed journals and indexed in key clinical and scientific databases; and c) used a qualitative or mixed-method methodology. Studies were excluded from the review if they were non-English language, theoretical or methodological articles, policy documents, conference abstracts or presentations.

The searches were conducted across the following databases including MEDLINE, Embase, PsychINFO, Cochrane Database, International Pharmaceutical Abstracts, Database of Abstracts of Reviews of Effects, CINAHL and Web of Science. These databases were systematically searched from 1986, the year of the development of the WHO analgesic ladder to January 2017, the search was repeated to identify any relevant papers published from January 2017 - February 2018. The search strategy is provided in Appendix 3. Search descriptors included chronic pain, opioid, attitude and general practice. Reference lists of included articles were searched however handsearching was not conducted. The PRISMA flowchart summarises the search, review and selection process (Figure 1).

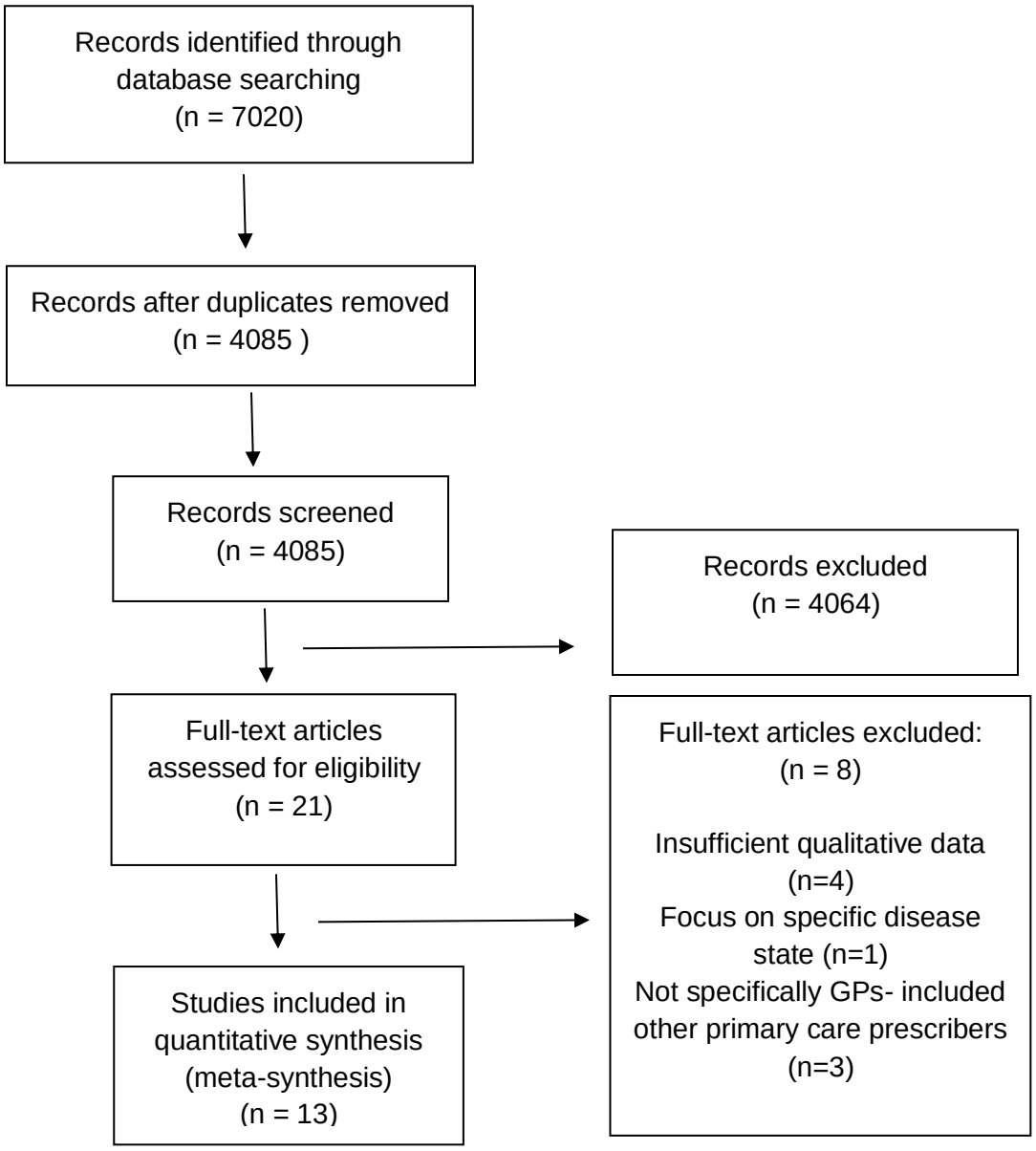

Figure 1: Search strategy

Study Selection

Two reviewers (REMOVED FOR ANONYMITY) independently screened titles and abstracts of all identified records to determine eligibility for inclusion in the review. Inconsistencies in selection were examined following review of titles and abstracts. The reviewers then independently assessed the full text of the articles. Disagreements were resolved by a third member (REMOVED FOR ANONYMITY) of the research team.

Quality Assessment

The quality of the studies was assessed using the Critical Appraisal Skills Programme (CASP) tool for qualitative research. [17] The CASP checklist highlights the information that should be included in a qualitative report and is widely used in qualitative reviews. [18] Two reviewers (REMOVED FOR ANONYMITY) assessed the quality of each study and a decision on the inclusion of studies was made with agreement of all authors.

Data synthesis and analysis

The results were organised using the process of Thematic Network Analysis (TNA). [19] TNA is a way of coding, organising and identifying emergent themes in a systematic way. All text in the included papers that were results or findings from the study were coded for basic themes by two researchers (MCK & PP) independently. Initial basic themes described the subject of the data extracted and did not attempt to interpret the data [20]. All data extracted from each paper was indexed and an overarching coding framework developed. All coded papers were then reviewed by two researchers (REMOVED FOR ANONYMITY) and where necessary re-coded. For example, some codes were merged and some were broken down into two or more codes as further data nuanced the emergent themes. A final check was completed to ensure codes were used consistently and exhaustively for all texts. Codes were then collated and each code was analysed to "identify the underlying patterns and structures" [19]. Memo's and journal entries written during the coding were included at this stage to examine the semantic features of each code; organising themes were developed through this process. The organising themes were then discussed by the two main researchers again (MCK & PP) and grouped into the global themes of the research. Data analysis was conducted using NVIVO Version 11 software.

Results

The search identified 7020 titles. Excluding duplicates (n=2935), 4085 titles were screened; 21 full text articles were reviewed. Thirteen articles were included in the review, the characteristics of these studies and associated CASP scores are presented in Table 1. Nine were from the USA, 3 from the UK and 1 from Sweden. The basic

codes underpinning the organising themes are presented in Table 2. Figure 2 provides an overview of the organising and global themes. Some basic codes were incorporated into more than one organising theme. Some organising themes are included in more than one global theme. This intersection of themes is normal and is demonstrative of both the close agreement of the papers as to the major issues and the complex nature of GP-patient relationships and encounters thus described.

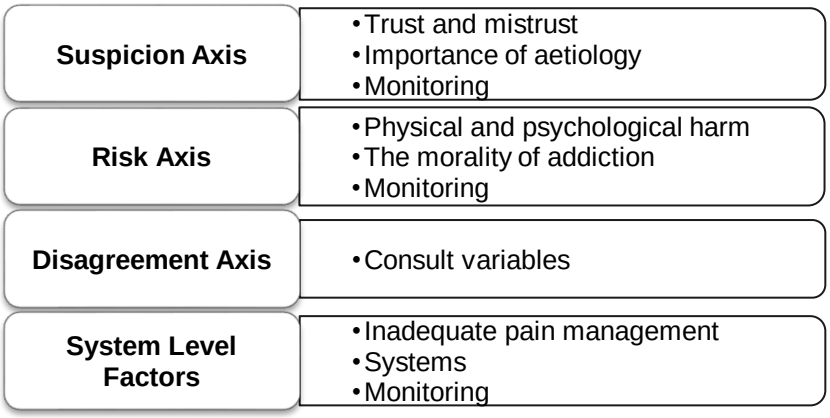

Figure 2: Organising and global themes

Suspicion Axis

This global theme describes the patient, GP and context variables which raise or lower a GP's suspicion of addiction and dependency, substance abuse, criminal activity, health system 'gaming' or other misuse of controlled prescription drugs. Factors such as the long-standing relationship and continuity of care between a GP and patient, demographic patient factors and the presence or absence of a definite diagnosis or aetiology of pain all mediate the variables in this axis of decision making.

Trust and mistrust

This theme appeared frequently across papers and is about the work the GP and the patient must do to gain and keep trust in each other. Characteristics, such as expectations of patient's behavior based on stereotypes, play a part, but so too does the history between the patient and GP. Trust is a processual factor in this context, it is built over time but can be eroded quickly if a GP feels that the patient is trying to manipulate

them. The attempt by a patient to obtain opioids is often automatically a suspicious act in the eyes of the GP. However, a patient in pain seeking relief in this respect will not necessarily present differently from one seeking opioids for addiction or dependence.

'I think everybody's fingers get burnt with people who you give the opioids to with a more trusting attitude than maybe you should have and the problem has quickly come back to you with needing more and more opioids.*"* [21]

GPs also doubted the patients' trust in both themselves and the risk-benefit analysis they made about opioid use. Further, the GPs noted that the stigma of opioids, especially in some communities, and that sometimes put patients off using them even when the GP's decision was that they would be helpful.

"Patients hear the word codeine or some [other opioid] that they recognize and they think of it as a street drug, and don't want to be associated with that. I think in this population, when street crime is so rampant, and they have families who have been hurt by street crime or family members who are in jail because of selling, patients are very *hesitant."* [22]

The demographic factors of a patient often changed the doctor's suspicion that a patient might be abusing and/or selling prescription drugs. Generally, GPs reported that they were likely to have less suspicion of misuse in older patients and sometimes racial and socio-economic factors also influenced them.

"I think if someone's history shows that they have an addictive personality, whether it be street drugs, alcohol, smoking pot, whatever that theoretical concern is, but the patients *I've used opiates for in non*-cancer are nearly always the elderly with joint pain and I *don't have any concerns about them, no."* [21]

However, many GPs were very aware of this tendency towards demographic stereotyping and actively reflected on this to avoid prejudice in their care giving,

although their assumption was usually towards the negative view that anyone would abuse prescription medication.

*"That there's a disconnect, saying, my brain wants to say…what we teach the residents… [that] anybody on narcotics [should have an O*pioid Treatment Agreement], *even if it's the sweetest little 85*-year-old woman who looks like your grandmother, versus, you know, some guy from the ghetto wearing his pants down at his knee*s… it shouldn't really matter."* [23]

Importance of aetiology

The recognition of the difficulties inherent in subjective pain assessment is at the heart of the GP decision making process. A diagnosed etiology helped a GP to feel more confident in the patient's reports of pain, but even then, the extent of the pain was hard to gauge.

"Pain is so subjective and so that's where the difficulty lies . . . I find it hard to say how someone's pain can be judged by someone else." [24]

The importance of an aetiology of the patient's pain was a critical factor in the GP's level of suspicion of abuse or aberrant prescription use. For patients who did not have an easily identifiable pathology, this led to difficulties for the GPs in managing their reported pain.

*"I feel this as a physician, when I see a patient who has, you know, a patho*logical fracture on an X-ray... *if there's something objectively definable it does c*hange the way *that I approach the patient."* [25]

Risk Axis

GPs conduct a risk-benefit analysis when deciding to initiate or continue a prescription for opioids. Three crucial elements in this decision making are the harm to the patient,

the harm to society and the harm to the GP themselves in terms of feelings of guilt and even the fear of professional sanctions should an incident occur.

Physical and psychological harm

Many of the GPs explicitly discussed the fact that they would prioritise risk avoidance over adequate pain relief. This is demonstrative of the 'devil and deep blue sea' conundrum that GPs face: the potentially devastating effects of addiction mean that adequate management of pain, a key professional obligation, is not always possible.

"For chronic pain in someone with a non-terminal type of illness you've got to weigh up what you are giving them in the long term, what are the potential side effects, is there an *issue with addiction and you're not going to just be increasing … For chronic pain, non-* malignant pain, I think there has to be an acceptance that you are not necessarily going *to get them pain free because they've got the rest o*f their lives to live as well ..." [21]

Related to the fear of causing harm was the guilt some GPs experienced, or might experience, due to opioid-related adverse events, causing them to think carefully before issuing a prescription:

*"*If something does happen to them, you feel guilty and want to crawl under a table when *they're in the emergency room and you get the call that they fell while on the fentanyl* patch you gave them. That kind of experience is powerful and definitely factors into the *equation."* [22]

Many GPs worried about the effect of frailty in their elderly patients, because of the much higher risks of side-effects or accidental injury. However, they also worried less about addiction in much older patients so the risk axis is complex to negotiate for frail patients.

"I just have a hard time prescribing opioids in my older patients. I get frightened with 80+ year olds; how are they going to respond? Am I going to absolutely drop them to the *floor even with a small dose?"* [22]

Patients with physical and mental illnesses in addition to their chronic pain were seen as particularly hard to prescribe for because of the difficulties in predicting their likely response to opioids and also their risk of becoming addicted. Some GPs saw addiction as a psychiatric co-morbidity in and of itself, and the resultant confusion about how to both manage pain with addictive substances and treat the addiction itself were very apparent.

Morality of addiction

The nature of the drug itself, its addictive qualities but also its situation in the moral and legal ambiguity as a controlled substance given for a more or less valid reason, changed the nature of the GP-patient relationship. GPs view themselves as gatekeepers, charged with determining the appropriateness of an opioid prescription for their patient. However, this is not merely informed by an objective clinical assessment but consideration of personal motivations in the context of current or previous psychosocial concerns. Implicit in the prescribing decision is a moral judgement.

"In most doctor–patient relationships we learn to listen to the patient and accept their testimony ... in some instances [in opioid prescription consults], to be quite honest, we *are interviewing the patient as if we are a police officer or a lawyer and we're trying to* find flaws in their story ... So, there is a different relationship here.*"* [25]

Disagreement Axis

This global theme concerns the level of agreement between patient and physician about the prescribing outcome from the consultation. Whether the patient is given opioids or not is not relevant to this axis, it is more concerned with the patient and GPs' mutual acceptance or conflict about the final management plan. Factors such as previous relationship with the patient as well as the factors discussed above in the suspicion axis,

influence the likelihood of GP-patient agreement but it is worth noting that the necessity to preserve trust itself did often lead GPs to make prescriptions that they were otherwise concerned about. Trust in a GP-patient relationship is crucial to any effective management plan, but all the GPs who discussed it hinted that it was easily disrupted. Again, this also links back to the importance of an identified aetiology, which at least gave the GP confidence that a prescription was necessary.

"I don't know what the pain is like. They really might be in pain. I don't want to challenge them and have them think that I don't trust them. I don't want to make them any more miserable." [26]

It is perceived as difficult for a GP to distinguish between drug seeking behaviour and pain relief seeking behaviour and this is at the core of the anxiety and conflict in the use of opioids for pain management. The way in which a patient presents has a huge influence on how much trust there is during the consultation and therefore on how likely the patient and GP are to agree on a management plan. Some of the physician's demonstrated much empathy for a patient in pain, but this empathy when coupled with a lack of options for managing CNMP means that inappropriate prescriptions are more often given. This is not to suggest that the pain shouldn't be treated but that the limited options for CNMP available in most primary care settings leave physicians with few options.

"You have to show a patient you you're empathetic to him. There is a pain. Pain is real" [24]

However, by displaying empathy, trust is developed and it may perhaps be easier to reach treatment agreements when such avenues of therapy are appropriate and available.

"There are people who have expressed an interest to me in not wanting to be on the *medication any more. Some have admitted that they're* probably at some level of

dependence or addiction and we have had open discussions about not wanting to need *this medication anymore."* [26]

System Level Factors

This global theme describes the context and influences on the GP, patient and clinic. Whilst these variables change over time, they do not change in the duration of the consult itself and are therefore the static parameters in which the consultation occurs. Some of the basic themes within this were universal, that is they applied to all countries and types of practice setting, such as the GP identified need for education and training on opioid prescribing. Some were specific to certain models of healthcare, for example, in the USA only certain patients who had the correct type of insurance could reliably attend a pain clinic, which made patients without such insurance more problematic for GPs to manage as there was no external support.

Across all countries, GPs worried that their prescribing practices were based on an unsystematic conglomeration of their previous experiences without any external guidelines on which to base their decisions.

'I suppose, the way I behave now prescribing for everything is a sort of rather woolly, *nebulous product of everything I've done, particular experiences of dealing with pain.'* [21]

Some GP's had specialist training in pain management as part of their initial training, but many felt like they were inadequately prepared and questioned the wisdom of leaving generalist primary care specialists to negotiate such a complex and potentially risky prescription management.

"It's a mistake promoting doctors like me to [treat pain and addiction]. It would be a societal mistake to have addiction and pain medicine be managed without other support services... Most of us in primary care end up [doing it] by default. *But that's not good. That's not something to be promoted."* [26]

Another reason for the perceived inadequate preparation of GP's for opioid prescription management is the scarcity of time and resources as the health systems of the USA and the UK become ever more stretched. A lack of training was identified across all settings, with many of the GP's feeling that they had training needs in opioid and pain prescription management.

"I think it's [anxiety about what to prescribe] just due to lack of experience with using opioids for non-malignant pain*... and because I haven't really done a lot of palliative care either."* [27]

A lack of time to properly assess a patient and their pain needs were identified by GPs.

*"*The biggest problem in the whole thing is lack of time. Typically, these are complex people with multiple problems, and you really could spend the whole appointment, more than 1 whole appointment, just talking about this [opioid agreement]… and you need to *really sit down and go through a person's record, and really try* to make a more rational *decision. I take it very seriously. It's serious business. What if you do create* an opiate problem for somebody? B*ecause you're not being careful enough about it?"* [28]

Further, a lack of specialist and joined-up support for both addiction and pain management was identified as a failure of the systems, again in all settings.

*''There is a really big access issue with the pain clinics right now…*So, while I can refer them, their likelihood of getting an appointment, even with strong advocacy from me, is very low.*"* [26]

Many of the discussions about individual prescriptions also opened out to consideration of the wider issues in prescription opioid dependence and societal harm. Opioid prescriptions are subject to specific legislation, in most countries strong opioids are a controlled substance, primarily due to their association with misuse. Due to these tight

controls on their availability, opioids, particularly the more potent drugs, can have a high monetary value in illegal sale and usage.

*"*We have a responsibility to be careful with prescribing these medications, so when we get burned, society gets burned, patients get burned.*"* [25]

Monitoring appears in all four global categories and is such a cross cutting theme as GPs attempt to improve their management of CNMP and to ameliorate harm at both the patient and societal levels. GPs used contracts, sometimes to support their management and other times because they felt it was expected of them. There was much ambiguity around the use of contracts and a recognition that, whilst they could be useful, they also had the potential to damage the fragile patient-GP trust relationship.

"The contract I really use so that it formalizes our relationship.it makes it easier if you have to take it to the next step and make this referral [to substance use disorder *treatment]."* [26]

Many GPs thought that this change to the relationship was not productive and felt that it ran counter to the trust-based nature of their roles.

"I think [drug screening is] destructive to a basic patient-doctor relationship. You're there to help them and they can tell you their deepest, darkest secrets, but yet you*'re policing* them. [28]*"*

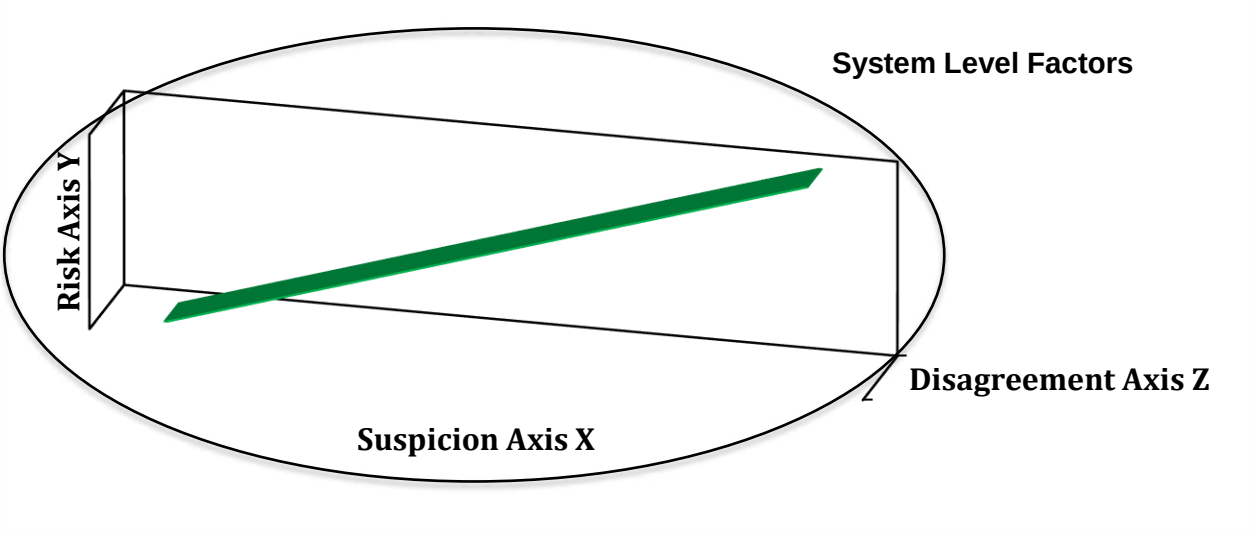

Figure 3: Theoretical framework: Risk, suspicion and disagreement axes interact to shape the opioid prescribing decisions. These are also influenced by system level factors which are seen to encompass these other variables.

Theoretical Model

Through synthesis of basic themes to organising themes then global themes, an overarching theoretical model was developed (Figure 3). The model proposes that when faced with a decision to prescribe an opioid for a patient with CNMP, the GP, operates within this framework. The decision to prescribe is informed by the perceived or actual risks associated with prescribing an opioid for the patient, both physical and psychological, the risk axis (Y-axis). This is balanced with the credibility of the pain complaint combined with the likelihood of developing aberrant drug behaviours, the suspicion axis (X-axis). At the centre of the decision-making process therefore is ingrained the GPs understanding of the physical, psychological and moral qualities of the patient, the credibility of their pain condition and potential for opioid misuse offset against the therapeutic appropriateness of the prescription. This is further balanced with the expectations of both parties in the consultation, the GP and the patient, the disagreement axis (Z-axis). If both parties agree about the desired outcome of the consultation, the issuing of an opioid prescription, is a fait accompli in that consultation. The healthcare system and legislative requirements relating to opioid prescriptions provide an inflexible environment in which the consultation takes place, the system level

factors. System level factors will not only differ for GPs internationally but on a regional and practice level basis.

Discussion

This study has reviewed the factors affecting the prescribing of opioids for CNMP by GPs in primary care. By integrating the findings of the qualitative literature and deriving a theoretical model, we hope to progress the discussion on this subject, from one which seeks to map factors related to opioid prescribing to one which seeks to provide practical solutions. As GPs are responsible for the burden of care, it is imperative that the dynamics of opioid prescribing specific to primary care are mapped in order to identify practice changes that are of direct relevance to GPs.

The theoretical model that has been derived from the metasynthesis proposes that the factors underpinning the decision to prescribe are not weighted against each other in a risk/benefit equation as previously hypothesised in the literature. [29] Rather, it is proposed, that factors, in this case modelled as global themes, interact to affect the likelihood of a safe and effective prescribing outcome. For example, a young healthy patient with no co-morbidities presents less risk than a multimorbid older patient. However, the younger patient may trigger concern for the GP if actively requesting a prescription for an opioid particularly in the absence of a defined aetiology. Therefore, the younger patient, while low on the risk axis will be higher on the suspicion axis. The likelihood of being prescribed an opioid will be further diminished if the patient and GP are unable to reach a shared understanding of the analgesic management plan for the patient.

Opioids, although a highly effective family of analgesics, have a unique set of considerations that inform their use, the legal constraints surrounding their prescription and supply due to their potential for abuse and misuse, the side-effects of these medications together with their ill-defined benefits when used in the long-term. [30] These issues attach an element of stewardship to the prescribing of these agents, shifting the task to the more complex end of the prescribing spectrum. The public health and societal risks guiding the prescribing of opioids are akin to antibiotic stewardship; we propose that the policy recommendations and practice guidance should also follow this

model. However, at present, while we seek to manage antibiotic resistance on a public health level, the very real issues of mortality and morbidity with endemic opioid misuse is usually discussed as it pertains to an individual's behaviour. In practice, this moral construct obfuscates the real core of the current opioid crisis, which is that of a very small number of widely available options in CNMP management and adequate pain control. The morality which is embedded within discussion of opiate use, but rarely acknowledged, also leaves little room for discussion of the non-pathophysiological dimensions of pain and the complex relationship between mental health and CNMP.

A more objective and holistic view of patients with CNMP, especially that pain which does not have an identified aetiology, would perhaps lead to more psychological and physiotherapeutic interventions. These types of interventions are currently endorsed by the literature and within guidelines and are undoubtedly are of benefit to patients in the management of their pain condition. [30-32] However, at present access to these treatment pathways can be difficult for patients with CNMP. [33] Integrating psychological interventions into GP consultations is one strategy for overcoming the challenge relating to the limited access to such services. [32] For such interventions to be incorporated into any patient-physician encounter, it is obviously essential that the patient's pain experience is believed and accepted by the GP in the first place. Disbelief is often cited within the literature as a significant barrier for patients in accessing the supports they require. [34]

There is no doubt from the literature that pain control is a life changing intervention for many patients, but the risk benefit analysis of using opioids to this end is not often done in an objective way because of the attendant moral concerns around this class of drugs. Further, issues of health inequality are also often obscured by the morally loaded discussions around the opioid crisis. Patients who are of low socioeconomic position are at once more likely to experience untreated physical injuries and illnesses, more likely to have mental illnesses which contribute to or cause presentations of CNMP and are less likely to be managed in specialist facilities. [35] Thus, the burden of mortality is skewed towards the most vulnerable, towards those most likely to have pain and to be poorly managed within that pain. This fact needs to be part of the discussion too, as it is in and of itself an issue of morality and without a

consideration of this in planning novel strategies for stewardship, we will not target the people most in need.

Increasingly, recommendations within the literature is for GPs to not prescribe any opioids except for palliative care. [30, 36] Such a change in prescribing strategies is a significant shift from current practice and perhaps oversimplifies the solution to the opioid epidemic and, as above, will further exacerbate the inequalities in pain management. Furthermore, this advice is not helpful for those GPs caring for patients already established on an opioid regimen with opioid tapering a resource intensive and challenging process. Such a stance is also challenging in the context of a healthcare system with limited access to specialised care and where the cost of non-pharmacological interventions is not subsidised by the healthcare system or cannot be met by the individual alone.

Strengths and Limitations

The thematic review was conducted systematically and methodically, with each stage of the research being validated by at least two authors however, it is possible that other interpretations may be derived from the papers included in the review. A systematic approach was taken to identify papers and the search was conducted by an experienced librarian. However, only papers that were published in peer-reviewed journals were identified as the search did not extend to grey literature. Methodologically the papers were similar, most utilised unstructured or semi-structured but in-depth interviews with GP's within a standard non-theory based qualitative approach.

Conclusion

The prescribing of opioids for CNMP by GPs is influenced by factors relating to the specific patient, the consultation, experiences and perceptions of the prescriber as well as the healthcare system in which the GP operates. Rather than a relatively linear risk-benefit relationship, there is a complex interaction within the consultation between these various factors which affect the likelihood of a prescription being issued. The implicit morality judgment that is associated with the use of opioids is a key factor that is perhaps unique to this class of drugs. Current policy recommendations directed at GPs

oversimplify the complex process underpinning the initiation or continuation of opioids in primary care, it is therefore unsurprising that increasing trends in opioid prescriptions have remained stubbornly consistent. Further research and development of strategies based on overarching models of stewardship and specific tools for consultation need urgently to be developed.

Declaration of Conflicting Interests

The Authors declare that there is no conflict of interest

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Table 1: Characteristics of included studies

Study	Geographical Location	Methods	Participants	Data Collection	Aim	Key Themes	CASP score (max 10)
Barry et al., 2010	USA	Grounded theory using constant comparative method for systematic inductive analysis	23 office based physicians (13 women, 10 men)	Semi-structured interviews	Identify barriers and facilitators to opioid treatment of chronic non cancer pain patients by office based medical providers	Three key themes which were further subdivided into subthemes: Physician factors Patient factors Logistical factors	8
Bendtsen et al., 1999	Sweden	Critical incident technique	114 physicians (general practitioners and general practice registrars)	Semi-qualitative: questionnaire	Explore the qualities of dilemmas and considerations among physicians prior to deciding whether or not to prescribe opioid analgesics to patients in a primary care healthcare setting	Concern about abuse and addiction with no proper indication for the drug Indication for the drug – acute or chronic pain	8
Bergman et al., 2013	USA	Inductive thematic analysis	14 Primary care practitioners 26 patients with chronic pain	One-time in depth interviews	Develop a better understanding of the respective experiences, perceptions and challenges that patients with chronic pain and PCPs face communicating with each other about pain management	Role of discussing pain versus other primary care concerns Acknowledgement of pain and the search for objective evidence Recognition of patient individuality and consideration of relationships	9
Esquibel and Borkan, 2014	USA	Immersion/ crystallisation process generate a thematic codebook	16 physicians	Patient-physician dyads (interviews)	To explore the ways in which opioids medication influence the doctor-patient relationship	Pain considered as a biopsychosocial model Challenges to legitimise and treat non-objective pain Chronic opioid therapy is not the preferred pain management modality Feeling inadequate as a care	10

						provider in treating pain Pain relied many not be a top health priority	
Gooberman-Hill et al., 2011	UK	Thematic analysis	27 GPs (13 men, 14 women)	Semi-structured interviews	To explore GPs' opinions about opioids and decision-making processes when prescribing 'strong' opioids for chronic joint pain	Are opioids the best option Managing adverse effects and assessing vulnerable patients Views about opioid addiction, withdrawal and misuse Importance of previous experience	10
Harle et al., 2015	USA	Open coding thematic analysis	15 family medicine and general medicine physicians (7 men, 8 women)	In-depth interviews	To understand how primary care physicians perceive their decisions to prescribe opioids in the context of chronic noncancer pain management	Physicians' information needs and use - Importance of objective and consistent information - Importance of identifying 'red flags' related risks to prescribing opioids - Importance of information about physical function and outcome goals - Importance of tacit knowledge and trust in patients Other decision making challenges related to opioids - Weighing potential therapeutic benefits against opioid risks - Time and resource constraints - The role of primary care specialties in managing pain	10

Krebs et al., 2014	USA	Qualitative immersion/ crystallisation approach	14 primary care physicians (recruited from 5 primary care clinics)	Semi-structured interviews	Understand physicians' and patients' perspectives on recommended opioid management practices and to identify potential barriers to and facilitators of guideline-concordant opioid management in primary care	Three barriers to use of recommended opioid management practices: Inadequate time and resources for opioid management Relying on general impressions of risk for opioid use Viewing opioid monitoring as a law enforcement activity	10
Matthias et al., 2010	USA	Thematic analysis	20 (10 men, 10 women from 5 outpatient primary care clinics)	Semi-structured interviews	To elicit provider's perspectives on their experiences in caring for patients with chronic pain	Providers emphasised the importance of the patient-provider relationship asserting that productive relationships with patients are essential for good pain care Detailed difficulties they encounter when caring for patients with chronic pain including feeling pressurised to treat with opioids	10
Matthias et al., 2013	USA	Emergent thematic analysis	5 (3 female, 2 male)(veteran affairs primary medical centre)	Recording of consultations with patients	Understand how physicians and patients with chronic musculoskeletal pain communicated about issues related to opioids	Uncertainties about opioid treatment for chronic pain, particularly addiction and misuse	10
McCrorie et al., 2015	UK	Grounded theory approach	15 GPs (11 women, 4 men)	Focus groups	Understand the processes which bring about and perpetuate long-term prescribing of opioids for chronic, non-cancer pain	Organisation of UK general practice Available therapeutic options Expertise in managing chronic pain	10
Seamark et al., 2013	UK	Thematic analysis	17 (interviews) 5 (focus group)	Semi-structured interviews Focus group	To describe the factors influencing GPs' prescribing of strong opioid drugs for chronic non-cancer pain	Chronic non-cancer pain is seen as different from cancer pain Difficulties in assessing pain Effect of experience and events	9
Spitz et al., 2011	USA	Directed content analysis	23 physicians	Six focus groups	Describe primary care providers' experiences and attitudes towards, as well as perceived barrier and facilitators to prescribing opioids as a treatment for chronic pain among older adults	Fear of causing harm Pain subjectivity Concerns about regulatory and/or legal sanctions Perceived patient- level barriers to opioid use Greater comfort in using opioids in palliative care	9

						Frustration treating pain in primary care	
Starrels et al., 2014	USA	Grounded theory approach	28 primary care providers (18 women, 10 men)	Semi-structured telephone interviews	To determine primary care providers' experiences, beliefs and attitudes about using opioid treatment agreements for patients with chronic pain	Perceived effect of OTA use on the therapeutic alliance Beliefs about the utility of OTAs for patient or providers Perception of patients' risk for opioid misuse	9

Table 2 Basic codes, organising and global themes

Suspicion Axis	Risk Axis	Disagreement Axis	System Level Factors
Trust and mistrust I'm not abusing anything – the fine line between pain control and abuse Medical or psychiatric comorbidity Undiagnosed focus or cause Disruptive influence of substance use disorder Psychological or non-pain reasons to take opioids Health system gaming – benefits insurance and selling prescriptions If you can't see the dilemma in this situation Patient asking for opioids and losing physicians respect Demographics, stigma and stereotyping Aberrant medication use **Importance of aetiology** Objective pain assessment Appropriate indication – arising from objective evidence Medical or psychiatric comorbidity Undiagnosed focus or cause assumption of abuse **Monitoring** Assessment Patient frustration with inadequate pain management Drug testing and contracts Monitoring Physicians concerns for side-effects and addiction Follow up and review Adverse effects Disruptive influence of substance use disorder Aberrant medication use	**Physical and psychological harm** Physicians concern for side effects and addiction If you can't see a dilemma in this situation Aberrant medication use Medical or psychiatric comorbidity **The morality of addiction** If you can't see the dilemma in this situation I'm not abusing anything – the fine line between pain control and abuse Health systems gaming – benefits, insurance and selling prescriptions Patient asking for opioids and losing physician respect Drug testing and contracts **Monitoring** Assessment Patient frustration with inadequate pain management Drug testing and contracts Monitoring Physicians concern for side-effects and addiction Follow up and review Adverse effects Disruptive influence of substance use disorder Aberrant medication use	**Consult variables** Managing pain and opioid conversations Physician guilt and maintaining trust Physician frustration with patient Patient influences Prescribing practices Empathy Consultation Assessment Patient frustration with inadequate pain management Adverse effects Physician concern for side-effects and/or addiction Patient asking for opioids and losing patient respect Demographics, stigma and stereotyping Disruptive influence of Substance Use Disorder Knowledge and training Lack of clinical guidelines – vague Service limitations, time and resources	**Inadequate pain management** Patient frustration with inadequate pain management I'm not abusing or anything – the fine line between pain control and abuse **Systems** Lack of clinical guidelines – vague Service limitations, time and resources Cost and expense Law enforcement and rationing Lack of training Knowledge and training Health system gaming – benefits, insurance and selling prescriptions If you can't see the dilemma in this situation Patient asking for opioids and losing physician respect Disruptive influence of substance use disorder **Monitoring** Drug testing and contracts Disruptive influence of substance use disorder Aberrant medication use