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Experiences of Codeine Use, Misuse and Dependence: Application of Liese and Franz's Cognitive Developmental Model of Substance Abuse

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Background: Misuse of codeine-containing medicines is an emerging public health issue. **Aims:** We present the application of Liese and Franz's (1996) cognitive developmental model of substance abuse to the trajectory from legitimate codeine use for pain, towards that of therapeutic and other forms of misuse, and physical and psychological dependence. It illustrates a cognitive behavioural analysis of the experiences of codeine misusers – which 'surfaces' the specific beliefs, thoughts, emotions and behaviours of this group of hidden codeine dependent individuals, who are distinct and unique from other opioid-dependent cohorts. **Method:** In-depth one-to-one interviews with codeine misusers and dependent individuals in Ireland ($n = 21$) and South Africa ($n = 25$) are analysed and applied to Liese and Franz's (1996) cognitive developmental model of substance abuse. **Results:** Misuse and dependence pathways are maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences such as therapeutic need, pre-empting of anticipated physical pain, pleasure from the dreamy sedative opiate effect of codeine and relief of emotional distress. Progression towards habitual use and misuse for therapeutic and intoxication purposes appears to be mediated by external environmental

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triggers pertaining to availability, internal meta-cognitions around physical pain and emotional distress, and increasing importance of codeine in the life of the user. **Conclusion:** The concept mapping of codeine misuse and dependence presented here could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence, with an enhanced understanding of the key concepts involved in misuse and recovery pathways.

Keywords: codeine, pain, addiction, cognitive behavioural therapy, opioid

Introduction

Global trends in the misuse of prescription and over-the-counter (OTC) opioids are driven by prescribing trends, forms of patient self-medication and public availability (Collins and McAllister, 2006; Cooper, 2013a). Misuse definitions vary, but are broadly defined as ‘*the use of a medicine, with or without a doctor’s prescription, clearly outside of accepted medical practice or guidelines, for recreational purposes or in the framework of self-medication, in greater dosages or for longer periods than were prescribed, in which the risks and problems associated with use outweigh the benefits*’ (Casati et al., 2012, p. 230). Public misuse and potential for misuse of codeine-containing medicines in particular has received attention in recent times in Australia, the UK, Ireland, France and South Africa (McAvoy et al., 2011; Stannard, 2013; Tobin et al., 2013; Nielsen et al., 2015c). Codeine, or 3-methylmorphine, is a short-acting, weak to mid-range opiate (Tremlett et al., 2010). Codeine-containing medicines are available (at the time of writing) in OTC formulations for the symptomatic relief of mild to moderate pain or cough (Derry et al., 2013), and at varying strengths per country regulatory regime (Van Hout and Norman, 2015c).

Typical side-effects of codeine include euphoria, altered perceptions and emotional responses to pain, and sedation, and development of tolerance within relatively short time-frames on repeated use (Romach et al., 1999; Sproule et al., 1999; Frei et al., 2010; Nielsen et al., 2010; Babalonis et al., 2013). Harms relating to excessive and/or long-term use of codeine-containing medicines are well documented (Robinson et al., 2010), and often occur in individuals with no history of substance use disorders or co-morbidity (Van Hout et al., 2014). Clinical profiles vary and are distinct from other opiate dependents, but include all ages, genders, alcohol and poly-substance users, and patients with chronic pain and/or underlying psychiatric conditions (Myers et al., 2003; Nielsen et al., 2008; Otto et al., 2009; Robinson et al., 2010; Thekiso and Farren, 2010; Nielsen et al., 2011; Agyapong et al., 2013; Roussin et al., 2013; Nielsen et al., 2015a,b). Problematic codeine users do not easily recognize problematic use or dependence, and view themselves as different to other substance abusers (Romach et al., 1999; Pates et al., 2002; Nielsen et al., 2010; Cooper, 2013b; Marr and Hill, 2015; Nielsen et al., 2015a).

Building on this ‘uniqueness’, we used concept mapping (Liese and Esterline, 2015) to apply Liese and Franz’s (1996) cognitive developmental model of substance abuse to the accounts of two groups of individuals from Ireland (Van Hout et al., 2015b) and South Africa (Van Hout et al., 2015d) that experienced codeine use, misuse and dependence. Concept mapping according to Liese and Esterline (2015) advocates case mapping which when shared with the patient, can function as an intervention to support behaviour change by presenting methodical generated graphic representations of the client’s dynamic relations and pathways towards substance dependence. Ultimately this mapping exercise could be used to better

integrate specific cognitive and behaviour change strategies for those experiencing codeine misuse and dependence, and for therapists to better understand the unique challenges of this OTC opiate drug as it relates to the role of feelings and emotions as influences for use, environmental influences on behaviour change, and limits of self-control (Borland, 2014). We chose the model designed by Liese and Franz (1996) as it is compatible within current opiate substitution treatment (OST) and harm reduction approaches to treatment (Liese, 2014).

Method

Aim

The aim of this study was to apply Liese and Franz's (1996) cognitive developmental model of substance abuse to the in-depth narrative accounts of two samples of individuals from Ireland and South Africa experiencing codeine misuse and dependence. Ethical approval in South Africa was granted by the Ethics Committee of the South African Medical Research Council, and by the Waterford Institute of Technology and the National Drug Treatment Centre Board (NDTCB) in Ireland. Both studies were conducted in two very distinct regulatory regimes and aimed to garner unique individual and collective lived experiences of codeine misuse and dependence, from purposive samples of adult codeine misusers and individuals dependent on codeine (actively misusing and in recovery) in Ireland ($n = 21$) and South Africa ($n = 25$). Sampling for both the Irish and South African studies continued until saturation of the data occurred. We utilized extant narratives from these national studies and applied Liese and Franz's (1996) cognitive developmental model of substance abuse to concept map a cognitive behavioural analysis of the experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours.

Selection of participants

Recruitment of participants was facilitated by the National Head Office of the South African National Council on Alcoholism and Drug Dependence (SANCA) and the NDTCB in Ireland, which oversee national addiction treatment systems in the respective countries. Both national treatment organizations nominated key gatekeepers in each treatment centre to provide their patients with information on the research study, and to ask if they wished to partake in an interview. Informants were eligible for interview if they were: citizens of the country in which the research was conducted (Ireland or South Africa), 18 years of age or more, reported using codeine in excess of accepted medical guidelines, and scored five or more on the Severity of Dependence Scale (SDS) (Gossop et al., 1995), a measure of the psychological components of codeine dependence; a score of five or more on the SDS has been found to identify problematic codeine use with a high degree of accuracy (Nielsen et al., 2010). The demographic profile of the participants is reported in [Table 1](#).

Interviews

Interviews lasted between 30 and 90 min, and were conducted in treatment and private settings. The interview guide was developed based on the literature contained in an extensive scoping review on codeine conducted by the team (Van Hout et al., 2014). Questions centred

Table 1. Participant profile

Ireland	South Africa
Gender	Gender
57% female	40% female
43% male	60% male
Age range	Age range
26–62 years	21–74 years
Mean age: 39 years	Mean age: 43 years
Standard deviation 12.42	Standard deviation 9.93
Employment status	Employment status
52% unemployed	64% unemployed
Use of codeine	Use of codeine
72% used codeine within the last 12 months	80% used codeine within the last 12 months
90% reported codeine analgesics as primary problematic drug	32% reported codeine analgesics as primary problematic drug
	20% reported codeine anti-tussive syrup as primary problematic drug
SDS score	SDS score
80% scored 10 or above	52% scored 10 or above

on participant choices and decision making to use codeine (prescribed or over-the-counter), experience of sporadic and continued codeine use and misuse, reinforcers for use, misuse and dependence, sourcing, awareness of risk and abuse potential, adverse consequences and accessing of treatment services.

Analysis

Narratives were combined and analysed using the Empirical Phenomenological Psychological (EPP) five-step method (Karlsson, 1995). This method was used to interpret the meaning structure of lived psychological phenomena relating to the subjective codeine misuse and dependence experience. A dialectic understanding of the whole picture and its part-components was used to create an incremental understanding of the relationship between the individual and the codeine-containing medicine. Above the thematic level, higher levels of abstraction were grounded in user lack of awareness of habit-forming use, self-legitimization of use and the pre-empting of physical pain, management of emotional distress, and the invisible and isolating nature of dependence.

Psychological model of codeine misuse and dependence

Shaffer, LaPlante and Nelson (2012) and Shaffer et al. (2004) view addiction as a syndrome with common causes, multiple opportunistic expressions, and with shared neurobiological and psychosocial antecedents and experiences. This syndrome is cognisant of the role of individual characteristics, drug used, and environmental factors influencing transitions from use to misuse, and ultimately development of dependence. West (2005, 2013), whilst recognizing the heterogeneous nature of mechanisms underlying addiction, underscores the

effect of motivational dysfunction through the unstable presence of responses, reflexes, impulses/inhibitory forces, desires, evaluations (beliefs), and overarching plans that interact with the individual's internal and external environment. Addictive behaviours (such as misuse of codeine) are viewed by Beck et al. (1993) as emerging from interplay between layers and levels of substance-related (anticipatory, relief-oriented and permissive) and facilitative beliefs, and high-risk situations that activate automatic thoughts, and feelings of urges and cravings to use, within a cycle of addiction.

A complex interaction between cognitions (beliefs, thoughts, schemas), opinions, expectations, values, suppositions, behaviours, emotions, social relationships, cultural influences and physiological processes occurs (Alford and Nocross, 1991; Beck and Alford, 2000). Beck's cognitive model of addiction underpins cognitive therapy for substance use, through behavioural strategies centring on avoiding high-risk situations, finding new coping mechanisms, and working with substance-related beliefs. In Beck's model, the expectancies of substances are a key difference between those using problematically and those not, and with dysfunctional beliefs playing a role in the generation of urges (Beck et al., 1993; Liese and Franz, 1996), with beliefs and expectancies interacting with the emotional, environmental and physiological systems, and facilitating the development and maintenance of the disorder (Liese et al., 1999).

The model, presented in Fig. 1, applies Liese and Franz's (1996) cognitive developmental model of substance abuse, to concept map the cognitive behavioural analysis of the distinct and unique experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours around misuse and dependence on the legitimately used OTC opiate drug, codeine. Liese and Franz's (1996) model includes a developmental component preceding the point of continued use activated by 'activating stimuli' (see Fig. 1). These earlier factors include early life experiences, development of schemas, basic and conditional beliefs, exposure to and experimentation with substances and the development of drug-related beliefs. This developmental process can influence potential vulnerability for codeine use, misuse and dependence. Seven stages are then depicted in the model of acute periods of codeine use, misuse and dependence with individuals not necessarily following a linear trajectory through the stages identified. The stages are: (1) activating stimuli for codeine use; (2) beliefs activated; (3) automatic thoughts; (4) transitioning to codeine misuse and dependence (urges and cravings); (5) enabling beliefs; (6) instrumental strategies; and (7) continued codeine misuse and dependence (see Fig. 1).

Developmental stages of use and misuse

The developmental component before point of 'continued use' (see Fig. 1) explores early life experiences, development of schemas, basic beliefs, exposure to and experimentation with substances and the development of drug-related beliefs. Early life experiences reported by participants centred on the 'loss of a parent' as a child and the emotional isolation experienced (South African male, 45 years); 'parental disharmony' (South African female, 43 years; Irish male, 31 years) and its negative impact on children; history of parents with substance misuse and dependence (South African male, 47 years; Irish male, 31 years; Irish female, 42 years); parental physical and emotional abuse of children (South African male, 36 years; South African male, 47 years; Irish male, 31 years); history of childhood behavioural problems and the use of medications to manage such challenging behaviours (South African male, 42 years); 'religion' and associated beliefs formed and held that alcohol was forbidden

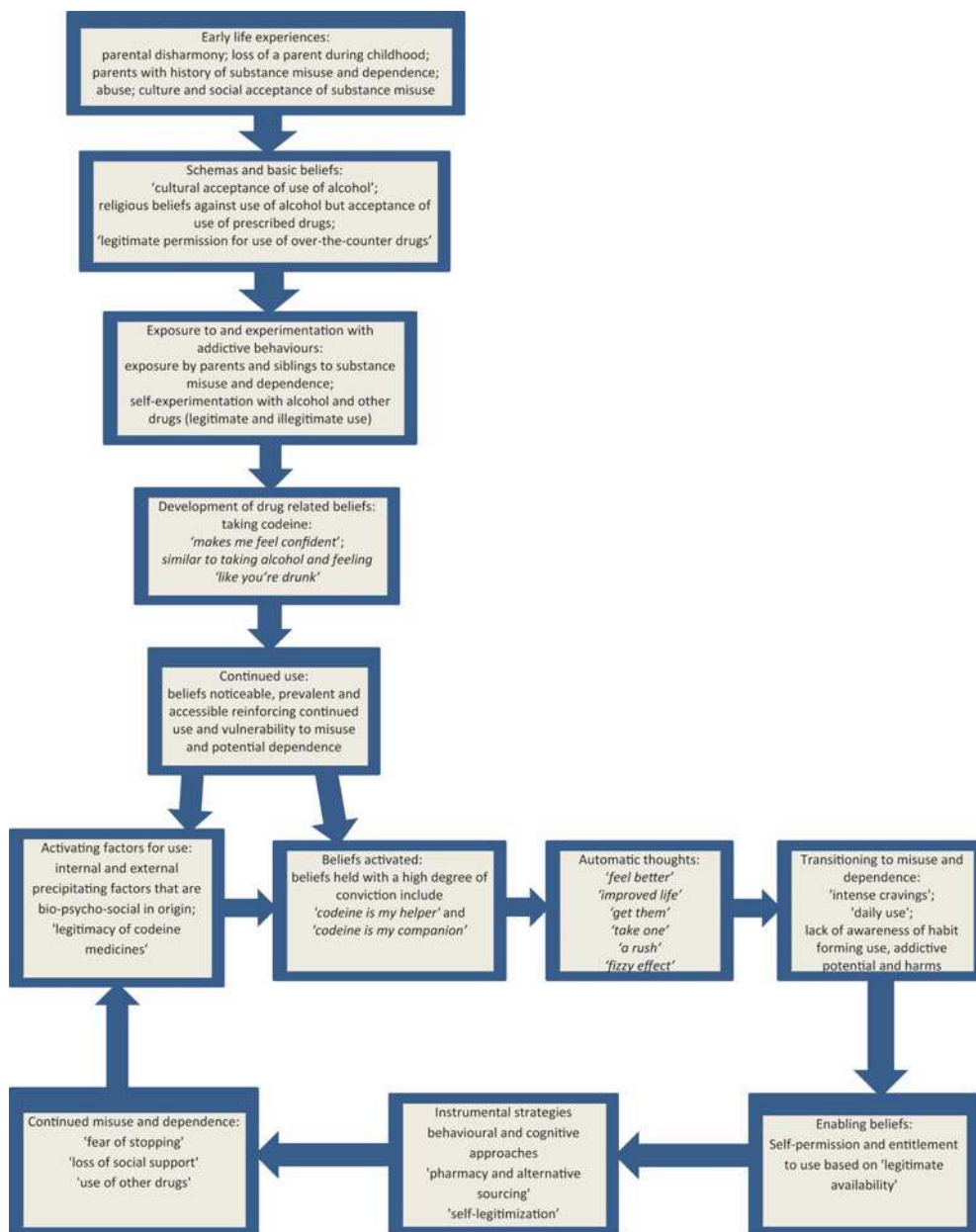


Figure 1. (Colour online) Cognitive developmental model depicting use, misuse and dependence of codeine containing medicines (adapted from: Liese and Franz, 1996)

but it was acceptable to use drugs that were legitimately available to purchase OTC (South African male, 45 years); to the ‘*culture of sports*’ and the social acceptance for some sports, for example, ‘*rugby*’ and its association with ‘*alcohol use and misuse*’ (South African male, 37 years).

Such early life experiences led some participants to develop beliefs that negatively impacted upon them, for example feeling ‘*emotionally isolated*’ resulted from parental loss, or having ‘*low self-esteem*’ and feelings of worthlessness as a consequence of physical and emotional abuse from parents who misused or were dependent on substances. Exposure to and experimentation with substances occurred with many individuals reporting exposure ranging from parental or sibling addictions to alcohol, nicotine and other substances to participants themselves experimenting in the past as teenagers and young adults with ‘*ecstasy*, ... *speed*, (Irish female, 26 years) *cannabis*’ (Irish female, 26 years; Irish male, 38 years; Irish female, 42 years) and ‘*cocaine*’ (Irish male, 50 years) to their own legitimate use of OTC and prescribed medications for physical conditions related to pain symptomology.

Specific positive drug-related beliefs were developed and maintained in relation to initial codeine use. For example, some participants described how initial use of codeine-containing medicines would make them feel more socially ‘*relaxed*’ (South African male, 37 years; South African male, 41 years; South African male, 47 years; South African male, 74 years) similar to the effects of alcohol, and also would enhance their self-confidence. One 31-year-old male Irish participant describes how:

‘I was never confident enough... to just go out and talk to people.... And then when I was out, I used to take codeine and... I would be very chatty. It’s almost like you’re drunk...’

A 42-year-old male Irish participant highlights how over time he increased his use of codeine to sustain feelings of confidence as were previously experienced:

‘... three... just twenty four [codeine tablets] until they were gone but then I was getting to [the] sixties and I wasn’t getting the effect anymore, well I was getting it a bit but I wasn’t... as confident as I would be, ... [then]... stretching up to eighty four [codeine tablets]...’

In sum, early life experiences, social norms and schemas about the cultural acceptability of drugs, combined with exposure to and experimentation with addictive behaviours appears to lead to positive beliefs about codeine, which reinforces continued use.

Activating factors

We distinguish between internal and external precipitating factors that predispose the person to risk for using codeine-containing medicines. Internal precipitating factors occur within the individual, while external factors are contextualized beyond the individual’s psychobiography and are situated either within relational or social contexts, or both. Examples of internal factors are bio-psycho-social in origin and include individuals experiencing physical pain, emotional distress, depression, anxiety, stress-related conditions, low self-esteem and a sense of an ‘*internalized loss*’ of control resulting from adverse life events and the use of codeine for reducing the perceived impact of psychological trauma.

External precipitating factors could include adverse life events such as lone parenting, unemployment, marital and relationship disharmony and divorce. These experiences of ‘*internalized loss*’ lead to relational conflict within social networks, often resulting in social

isolation and loss of support networks. Such internal and external precipitating factors are situated within a wider context of the ‘legitimacy’ status of codeine products, ‘advertising of products’, ‘pharmacy availability’ and ‘over the counter’ access to codeine-containing medicines.

Beliefs activated

Many codeine-dependent individuals do not realize they are dependent. Anticipatory and relief-oriented beliefs are formed as a consequence of internal and external activating factors. Anticipatory beliefs that are convincingly held focus on the efficacy and pleasures associated with use and misuse, whereby codeine is viewed as ‘my helper’ and ‘companion’. The presence of emotional pain and self-legitimization of use is a common belief.

‘Pain killers are not just for what is written on the back of the pack, they should add also pain relief from anxiety, depression and heartache.’ (Irish female, 26 years)

Automatic beliefs that codeine-containing medicines can ‘manage discrete episodes of physical pain’, ‘deny or suppress psychological symptoms’ and ‘lift up moods’ are held. Such beliefs range from relief-oriented beliefs, and involve the expectation of reprieve from physical and emotional symptoms, for example helping them to relax, to beliefs relating to mood elevation and regulation. Such automatic or involuntary thoughts sustain the convincingly held beliefs that ‘codeine is my helper’ and ‘codeine is my companion’.

‘I wasn’t expecting the high I got but I was very happy with its effects, it felt like the missing piece to my life.’ (Irish female, 26 years)

Automatic thoughts

Involuntary or automatic thoughts are described as a consequence to deeply held beliefs, such as ‘codeine is my helper’ and ‘codeine is my companion’. Such beliefs contribute to the development of the role of codeine as ‘crutch’, ‘friend’ and ‘helper’ in correspondence with dependence and to the detriment of ‘real life social relations’. Automatic thoughts triggered that are brief and spontaneous in relation to such basic beliefs include ‘feel better’, ‘improved life’, ‘get them’ and ‘a rush’. As two Irish participants stated:

‘I always deep down knew I was abusing it but some of my thoughts were, so what? It’s serving you a purpose, it’s making life better, it’s only an over the counter drug. I used it for just under a year’ (Irish male, 30 years)

‘I used to take it [codeine tablets] then just to make myself feel better. When I used to get up and feel crap, I’ll take it and feel instantly better. That is what I used to do. That is what I still do; and now it’s like it has become part of my daily routine in my daily life. ... I’d get very uplifted when I was using that stuff [codeine tablets]’ (Irish male, 31 years)

Images as automatic thoughts were sometimes described, for example ‘fizzy effect’ following use of soluble codeine medications and its pleasurable effects. One male participant described how ‘soluble codeines in water with that fizzy effect... it gave me the hit and it gave me a rush’ (Irish male, 38 years). This association between drugs-related beliefs and thoughts lead the individual to desire codeine-containing medicines and ‘...to consume in order

to function throughout the day'. This creates a context whereby certain convincingly held beliefs are maintained.

Transitioning to misuse and dependence

Many individuals described their use of codeine-containing medicines as appropriate and consumed for legitimate reasons, prescribed or OTC and were largely unaware of codeine's abuse and dependence potential and the possible harms. Some are totally unaware of their physical dependence to codeine, despite an increase in their use, desire to continue to misuse and not being able to stop.

'It creeps up on you particularly if you've got an addictive personality.' (South African male, 38 years)

Awareness of habit-forming use and related tolerance is a gradual and subtle process with often a sudden realization that they were consuming more than normal, sometimes recreationally, with their 'bodies' experiencing withdrawal and requiring more codeine-containing medicines. This pattern of use would 'escalate' especially as a result of on-going life events negatively impacting upon their lives reinforced by beliefs that 'codeine is my helper' and 'codeine is my companion'. We failed to pinpoint any cultural or gender-related differences in the codeine use, misuse and dependence pathway, and speculate that this is due to the similarities in OTC availability, legitimization via prescriber and pharmacist routes of supply, and tolerance of alcohol and other drugs by wider societal forces.

Enabling beliefs

Enabling beliefs are held which facilitate self-permissiveness or reinforce a sense of entitlement to continue misusing codeine-containing medicines. Two specific enabling beliefs were identified. The first centred on the misuse of codeine as a coping mechanism to manage and pre-empt the occurrence of physical and psychological distress, in many cases relating to severe trauma and distress.

'Eventually there was not any pain, but I was scared of the pain in my mind.' (South African male, 47 years)

'Very quickly it was not enough in the morning to have me floating, feeling euphoric, and care free really. I was numb and I liked that. Codeine filled a void.' (Irish female, 32 years)

The second enabling belief highlights the importance of adverse social circumstances in underpinning codeine dependence pathways, so justifying codeine misuse as a novel adaptive coping mechanism for managing life stressors.

'I actually abused the codeine to suppress my depression and to give that euphoric effect. I felt a lot of isolation, guilt and grief.' (South African male, 36 years)

Instrumental strategies

Once individuals grant themselves permission to use codeine-containing medicines, their focus moves to instrumental (behavioural and cognitive) strategies to secure the medicines

either through legitimate sources (multiple pharmacy purchasing, ‘*doctor hopping*’) or via the ‘*black market*’. Participants explained:

‘... it became a very ingrained thing for me [to do].’ (South African male, 21 years)

‘An addiction will find a way, there’s always a way. When you want something you will always find a way to get it.’ (Irish female, 45 years)

Legitimate sourcing involves behaviours that are deceptive and manipulative, involving lying, faking illness or exaggerating symptoms to secure a script or supply of the medicine.

‘Exaggerating symptoms and manipulating the conversation. I always had an answer.’ (South African male, 38 years)

Habitual daily therapeutic and non-therapeutic use escalates with high dosages consumed within a short time frame. This often occurs as a result of failure to develop alternative coping strategies in relation to physical and emotional pain. Individuals recognize their problem with regard to their daily use and misuse which leads in turn to ‘*self-legitimization*’ based upon their need to use codeine inappropriately. This need to use inappropriately is reinforced by a somatic ‘*recognition of liking the opiate effect*’, ‘*pleasurable effects*’ and ‘*codeine giving a buzz*’ with increased tolerance to adverse effects such as withdrawals, medication overuse headache, nausea, constipation, tachycardia and palpitations.

Continued misuse and dependence

Adopting instrumental (behavioural and cognitive) strategies, individuals are likely to continue to source and use and misuse codeine leading to dependence.

‘Addiction teaches you master manipulation. No matter what barriers you build an addict’s mind goes far beyond it.’ (Irish female, 26 years)

Beliefs held with conviction that ‘*codeine is my helper*’, ‘*codeine is my companion*’ and ‘*self-legitimization*’ reinforce their continued misuse and dependence. This process is further reinforced by pre-existing internal and external precipitating factors that predispose them to risk of using, misusing and dependence, and a ‘*fear of stopping*’.

‘My friends are gone and it’s more a companion addiction. It feels like it has its arm around you. It gives me that sense of security and that’s what I’m struggling with at the moment, it’s to break that cycle.’ (Irish male, 31 years)

Discussion

Liese and Franz’s (1996) cognitive developmental model of substance abuse is applied to the in-depth narrative accounts of a sample of individuals experiencing codeine misuse and dependence. A cognitive behavioural mapping of the psychological processes involved in transitioning from codeine use, to misuse and towards dependence is presented. Illustrations of the unique nature of these individuals’ experiences and pathways by virtue of codeine as a legitimately sourced OTC opiate drug despite carrying risk of habitual and dependent use, the accidental nature of inadvertent dependence, and interplay with various forms of physical and emotional pain, which ultimately creates difficulties in successful recovery. Reinforcers, triggers and thoughts are influenced by the thought processes around use, the pharmacy retail

environment, and to a lesser extent, prescribing patterns. Ultimately we sought to create greater understanding of codeine misuse and dependence in order to better inform the design of appropriate psychological treatment plans within existing OST management systems. The need to better understand and intervene with those requiring support for problematic codeine use is well evidenced in contemporary literature (Pates et al., 2002; Nielsen et al., 2010; Marr and Hill, 2015; Nielsen et al., 2015a).

Reliability and validity of the qualitative research process and the application of findings to Liese and Franz's (1996) cognitive developmental model of substance abuse are enhanced by the trustworthiness of the data used (Lincoln and Guba, 1985), which contain extensive and consistent similarities in the misuse and dependence phenomenon across the lived experiences and social circumstances in both countries, one in the developed, and the other in the developing world (Van Hout, et al., 2015b,d). Horizontal and vertical consistencies are visible in the interpretation of the codeine misuse and dependence phenomena, despite variance in cultural contexts, social circumstances and regulatory availability in each country. In terms of 'generalizability' both qualitative studies were underpinned by a constructivist approach that guided sampling, data collection and analysis and we do not claim that 'generalizability' was achieved. However, reliability of the data sources and validity of the model is further supported by triangulation of these qualitative studies, and the generated model itself against accounts of pathways to codeine misuse reported by other studies conducted in the UK (Cooper, 2011, 2013b), and Australia (Nielsen et al., 2010, 2011, 2013).

Borland (2014) advocates the need to consider how a '*hard to maintain*' behaviour is maintained, whether by the skills required to perform it, reinforcement patterns, cognitive thought processes, environmental factors, or a multiplicity of these factors, and that such behaviour is often not available for conscious awareness. Codeine misuse and dependence pathways appear to be maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences. These influences include therapeutic need and use pre-empting of anticipated physical pain, recognition of appreciation of the opiate sedative therapeutic effect both for legitimate therapeutic and non-therapeutic reasons. Iatrogenic dependence contributes to the blurring between therapeutic use and problematic use of codeine-containing medicines. Progression towards habitual use, dose escalation and medication of withdrawal and anxiety-related symptoms appears to be mediated by external environmental triggers pertaining to availability, and internal meta-cognitions around physical pain and emotional distress, and the significance of the role codeine assumes for the user.

Given codeine users' unique experiences with a legitimately available opiate drug, lack of self-identification of habit-forming use and pathways towards dependence, those patients do require psychological treatment interventions particular to their needs and in order for recovery to occur (Kean, 2015; Nielsen et al., 2011, 2015c; Van Hout et al., 2015a). The recognition of iatrogenic dependence in these patients warrants particular psycho-social interventions alongside the management of pain (Hard, 2014; Marr and Hill, 2015). Targeted psycho-social cognitive-based interventions are warranted for this distinct group of opiate dependents (Kean, 2015; Van Hout et al., 2015a,b,d) and particularly those that target client conscious awareness of transitioning of misuse towards dependence (Borland, 2014; West, 2005, 2013). The model is intended to help therapists integrate cognitive and behaviour change strategies (for example mindfulness and acceptance), with an understanding of the distinct challenges for these patients in navigating pharmacies when in recovery, the role

of trauma and distress in increasing their vulnerability, and coping mechanisms needed for successful rehabilitation. The role of codeine-containing medicines appears grounded in self-regulation vulnerabilities (Khantzian, 1997; Nielsen et al., 2010). Cognitive conceptualization can thus be reformulated during therapy, whilst gathering additional client information, experiences and evidence. Physiological, behavioural and social triggers, along with the interplay of anticipatory, relief-oriented and permissive beliefs can contribute to relapse, even in the absence of physiological symptoms such as pain.

Conclusion

Psychological interventions for codeine dependence should take account of the reinforcing cycles of physical pain, emotional distress and codeine misuse. This model could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence with an enhanced understanding of the key concepts involved in these unique dependence and recovery pathways.

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References

- Alford, E. A. and Nocross, J. C. (1991). Cognitive therapy as integrative therapy. *Journal of Psychotherapy Integrations*, 1, 175–190.
- Agyapong, V. I. O., Singh, K., Savage, M., Thekiso, B. T., Finn, M., Farren, C. K. and McLoughlin, D. M. (2013). Use of codeine containing medicines by Irish psychiatric in-patients before and after regulatory limitations on their supply. *Irish Journal of Psychological Medicine*, 30, 7–12.
- Babalonis, S., Lofwall, M. R., Nuzzo, P. A., Siegel, A. J. and Walsh, S. L. (2013). Abuse liability and reinforcing efficacy of oral tramadol in humans. *Drug and Alcohol Dependence*, 129, 116–124. doi: [10.1016/j.drugalcdep.2012.09.018](https://doi.org/10.1016/j.drugalcdep.2012.09.018)
- Beck, A. T., Wright, F. D., Newman, C. F. and Liese, B. S. (1993). *Cognitive Therapy of Substance Abuse*. New York: The Guilford Press.
- Beck, A. T. and Alford, B. A. (2000). *O poder integrador da terapia cognitiva*. (Tradução organizada por M. C. Monteiro). Porto Alegre: Artes Médicas (original publicado em 1996).
- Borland, R. (2014). *Understanding Hard to Maintain Behaviour Change: A Dual Process Approach*. Chichester, UK: John Wiley and Sons.

- Casati, A., Sedefov, R. and Pfeiffer-Gerschel, T.** (2012). Misuse of medicines in the European Union: a systematic review of the literature. *European Addiction Research*, 18, 228–245.
- Collins, G. B. and McAllister, M. S.** (2006). Combating abuse and diversion of prescription opiate medications. *Psychiatric Annals*, 36, 410–416.
- Cooper, R. J.** (2011). *Respectable Addiction – a qualitative study of over the counter medicine abuse in the UK*. Sheffield, UK: School of Health and Related Research (SchARR), University of Sheffield, Sheffield, UK.
- Cooper, R. J.** (2013a). Over-the-counter medicine abuse: a review of the literature. *Journal of Substance Use*, 18, 82–107.
- Cooper, R. J.** (2013b). ‘I can’t be an addict. I am.’ Over-the-counter medicine abuse: a qualitative study. *British Medical Journal Open*, 3, 1–9. e002913. doi: [10.1136/bmjopen-2013-002913](https://doi.org/10.1136/bmjopen-2013-002913)
- Derry, S., Karlin, S. M. and Moore, R. A.** (2013). Single dose oral ibuprofen plus codeine for acute postoperative pain in adults. *Cochrane Database of Systematic Reviews*, 14, 4: CD008099. doi: [10.1002/14651858.CD010107.pub3](https://doi.org/10.1002/14651858.CD010107.pub3)
- Frei, M. Y., Nielsen, S., Dobbin, M. and Tobin, C. L.** (2010). Serious morbidity associated with misuse of over-the-counter codeine-ibuprofen analgesics: a series of 27 cases. *The Medical Journal of Australia*, 193, 294–296.
- Gossop, M., Darke, S., Griffiths, P., Hando, J., Powis, B., Hall, W. and Strang, J.** (1995). The Severity of Dependence Scale (SDS): psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. *Addiction*, 90, 607–614.
- Hard, B.** (2014). Management of opioid painkiller dependence in primary care: ongoing recovery with buprenorphine/naloxone. *British Medical Journal Case Reports*, pii: bcr2014207308. doi:[10.1136/bcr-2014-207308](https://doi.org/10.1136/bcr-2014-207308)
- Karlsson, G.** (1995). *Psychological Qualitative Research from a Phenomenological Perspective* (2nd edn). Göteborg, Sweden: Almqvist and Wiksell International.
- Khantjian, E. J.** (1997). The self-medication hypothesis of substance use disorders: a reconsideration and recent applications. *Harvard Review of Psychiatry*, 4, 231–244.
- Kean, J.** (2015). Illicit and over-the-counter codeine dependence after acute back pain-successful treatment and ongoing recovery after buprenorphine/naloxone taper. *Heroin Addiction and Related Clinical Problems*, 5–8.
- Liese, B. S. and Franz, R. A.** (1996). Treating substance use disorders with cognitive therapy: Lessons learned and implications for the future. In P. Salkovskis (ed), *Frontiers of Cognitive Therapy* (pp. 470–508). New York: Guilford Press.
- Liese, B. S., Beck, A. T. and Seaton, K.** (1999). The cognitive therapy addictions group. In D. W. Brook and H. I. Spitz (eds), *Group Psychotherapy of Substance Abuse*. Washington, DC: American Psychiatric Press.
- Liese, B. S.** (2014). Cognitive behavioral therapy for addictions. In S. L. A. Straussner (ed), *Clinical Work with Substance Abusing Clients* (3rd edn, pp. 225–250). New York: Guilford Press.
- Liese, B. S. and Esterline, K. M.** (2015). Concept mapping: a supervision strategy for introducing case conceptualization skills to novice therapists. *Psychotherapy*, 52, 190–194.
- Lincoln, Y. S. and Guba, E. G.** (1985). *Naturalistic Inquiry*. Beverly Hills, California: Sage Publications.
- Marr, E. and Hill, D.** (2015). Optimising service provision for prescribed opioid analgesic dependence. *Heroin Addiction and Related Clinical Problems*, 17, 13–18.
- McAvoy, B. R., Dobbin, M. D. H. and Tobin, C. L.** (2011). Over-the-counter (OTC) ibuprofen/codeine analgesics: misuse and harm: characteristics of cases in Australia and New Zealand. *New Zealand Medical Journal*, 124, 29–33.
- Myers, B., Siegfried, N. and Parry, C. D. H.** (2003). Over-the-counter and prescription medicine misuse in Cape Town -findings from specialist treatment centres. *South African Medical Journal*, 93, 367–370.

- Nielsen, S., Bruno, R., Carruthers, S., Fischer, J., Lintzeris, N. and Stoove, M. (2008). *Investigation of Pharmaceutical Misuse Amongst Drug Treatment Clients*. Melbourne, Australia: Turning Point Alcohol and Drug Centre.
- Nielsen, S., Cameron, J. and Pahoki, S. (2010). *Over-the-Counter Codeine Dependence*. Melbourne, Australia: The Turning Point Alcohol and Drugs Centre.
- Nielsen, S., Cameron, J. and Lee, N. (2011). Characteristics of a nontreatment-seeking sample of over-the-counter codeine users: implications for intervention and prevention. *Journal of Opioid Management*, 7, 363–370.
- Nielsen, S., Cameron, J. and Pahoki, S. (2013). Opportunities and challenges: over-the-counter codeine supply from the codeine consumer's perspective. *The International Journal of Pharmacy Practice*, 21, 161–168. doi: [10.1111/j.2042-7174.2012.00247.x](https://doi.org/10.1111/j.2042-7174.2012.00247.x)
- Nielsen, S., Bruno, R., Murnion, B., Dunlop, A., Degenhardt, L., Demirkol, A. et al. (2015a). Treating codeine dependence with buprenorphine: Dose requirements and induction outcomes from a retrospective case series in New South Wales, Australia. *Drug and Alcohol Review*. Early online. doi: [10.1111/dar.12315](https://doi.org/10.1111/dar.12315)
- Nielsen, S., Murnion, B., Dunlop, A., Degenhardt, L., Demirkol, A., Muhleisen, P. et al. (2015b). Comparing treatment-seeking codeine users and strong opioid users: findings from a novel case series. *Drug and Alcohol Review*, 34, 304–311. doi: [10.1111/dar.12315](https://doi.org/10.1111/dar.12315)
- Nielsen, S., Roxburgh, A., Bruno, R., Lintzeris, N., Jefferson, A. and Degenhardt, L. (2015c). Changes in non-opioid substitution treatment episodes for pharmaceutical opioids and heroin from 2002 to 2011. *Drug and Alcohol Dependence*, 149, 212–219.
- Otto, C., Crackau, B., Löhrmann, I., Zahradnik, A., Bischof, G., John, U. and Rumpf, H. J. (2009). Brief intervention in general hospital for problematic prescription drug use: 12-month outcome. *Drug and Alcohol Dependence*, 105, 221–226. doi: [10.1016/j.drugalcdep.2009.07.010](https://doi.org/10.1016/j.drugalcdep.2009.07.010)
- Pates, R., McBride, A. J., Li, S. and Ramadan, R. (2002). Misuse of over-the-counter medicines: a survey of community pharmacies in the South Wales health authority. *Pharmaceutical Journal*, 268, 179–182.
- Robinson, G. M., Robinson, S., McCarthy, P. and Cameron, C. (2010). Misuse of over-the-counter codeine containing analgesics: dependence and other adverse effects. *New Zealand Medical Journal*, 123, 59–64.
- Romach, M. K., Sproule, B. A., Sellers, E. M., Somer, G. and Busto, U. E. (1999). Long-term codeine use is associated with depressive symptoms. *Journal of Clinical Psychopharmacology*, 19, 373–376.
- Roussin, A., Bouyssi, A., Pouche, L., Pourcel, L. and Lapeyre-Mestre, M. (2013). Misuse and dependence on non-prescription codeine analgesics or sedative h1 antihistamines by adults: a cross-sectional investigation in France. *Public Library of Science One*, 8, 1–10; e76499.
- Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N. and Stanton, M. V. (2004). Toward a syndrome model of addiction: multiple expressions, common etiology. *Harvard Review of Psychiatry*, 12, 367–374. doi: [10.1080/10673220490905705](https://doi.org/10.1080/10673220490905705)
- Shaffer, H. J., LaPlante, D. A. and Nelson, S. E. (eds). (2012). *The APA Addiction Syndrome Handbook* (vol. 1. Foundations, Influences, and Expressions of Addiction). Washington, DC: American Psychological Association Press.
- Sproule, B. A., Busto, U. E., Somer, G., Romach, M. K. and Sellers, E. M. (1999). Characteristics of dependent and nondependent regular users of codeine. *Journal of Clinical Psychopharmacology*, 19, 367–372.
- Stannard, C. (2013). Opioids in the UK: what's the problem? *British Medical Journal*, 347, f5108. doi: [10.1136/bmj.f5108](https://doi.org/10.1136/bmj.f5108)
- Thekiso, B. and Farren, C. (2010). 'Over the counter' (OTC) opiate abuse treatment. *Irish Journal of Psychological Medicine*, 27, 189–191.

- Tobin, C., Dobbin, M. and McAvoy, B.** (2013). Regulatory responses to over-the-counter codeine analgesic misuse in Australia, New Zealand and the United Kingdom. *Australian and New Zealand Journal of Public Health*, 37, 483–488.
- Tremlett, M., Anderson, B. J. and Wolf, A.** (2010). Pro-con debate: is codeine a drug that still has a useful role in pediatric practice? *Pediatric Anesthesia*, 20, 183–94. doi: [10.1111/j.1460-9592.2009.03234.x](https://doi.org/10.1111/j.1460-9592.2009.03234.x)
- Van Hout, M. C., Bergin, M., Foley, M., Rich, E., Rapca, A. I., Harris, R. and Norman, I.** (2014). *A scoping review of codeine use, misuse and dependence, final report*. CODEMISUSED Project European Commission 7th Framework Programme, EU. Brussels.
- Van Hout, M. C., Delargy, I., Ryan, G., Flanagan, S. and Gallagher, H.** (2015a). Dependence on over the counter (OTC) codeine containing analgesics: treatment and recovery with buprenorphine naloxone. *International Journal of Addiction and Mental Health*. Early online.
- Van Hout, M. C., Horan, A., Santlal, K., Rich, E. and Bergin, M.** (2015b). ‘Codeine is my companion’: misuse and dependence on codeine containing medicines in Ireland. *Irish Journal of Psychological Medicine*. Early online. doi:[10.1017/ipm.2015.60](https://doi.org/10.1017/ipm.2015.60)
- Van Hout, M. C. and Norman, I.** (2015c). Misuse of non-prescription codeine containing products: Recommendations for detection and reduction of risk in community pharmacies. *International Journal of Drug Policy*, Early online. doi: [10.1016/j.drugpo.2015.09.007](https://doi.org/10.1016/j.drugpo.2015.09.007)
- Van Hout, M. C., Rich, E., Dada, S. and Bergin, M.** (2015d). Codeine is my helper: a qualitative study of pharmacy access and codeine misuse in South Africa. *Qualitative Health Research*. Early online. doi: [10.1177/1049732315613764](https://doi.org/10.1177/1049732315613764)
- West, R.** (2005). *Theory of Addiction*. Oxford, UK. Blackwell Publishing. ISBN: 101-4051-1359–1366.
- West, R.** (2013). *Models of Addiction*. Portugal, Lisbon: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA).