A Pilot Study To Define Chemical Coping in Cancer Patients Using the Delphi Method

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Abstract

Background: “Chemical coping” is a commonly used term in the pain and palliative care literature, but is heterogeneously defined. We conducted a Delphi survey among palliative care and pain specialists internationally to identify a consensus definition for “chemical coping with opioids” and warning signs for chemical coping.

Methods: This Delphi survey consisted of two rounds on the following: (1) concepts and definition related to chemical coping, (2) warning signs for chemical coping, and (3) demographics. Consensus in this study was defined as agreement by a minimum of 70% of the experts.

Results: Participating in the first round were 14/19 (74%) physicians; 12/14 (86%) participated in the second round. The international experts reached the following consensus definition for chemical coping with opioids (92% agreement): “The use of opioids to cope with emotional distress, characterized by inappropriate and/or excessive opioid use.” They also identified depression (consensus 93%); psychiatric disease (86%); a history of substance abuse (86%); a positive score for the Cut-down, Annoyed, Guilty, and Eye-opener (CAGE) alcoholism screening test (79%); a history of alcoholism (79%); and a history of smoking (71%) as important warning signs for chemical coping.

Conclusion: Our expert panel reached a consensus definition for chemical coping and related warning signs, which may help clinicians and researchers to identify patients at risk of opioid misuse.

Introduction

PAIN IS A DEVASTATING SYMPTOM in advanced cancer, and opioids have become a mainstay of pain management.¹ However, physicians are often reluctant to prescribe opioids because of the risk of side effects and addiction.

The term “coping chemically” was first coined in 1995 with the frequency of alcoholism among cancer patients.² A specific definition was not provided at the time, but the authors discussed that alcoholic patients were educated on “the difference between physical pain, suffering, and coping chemically.” Since then, clinicians and researchers alike have applied the term “chemical coping” heterogeneously. Specifically, some have used the terms chemical copers, aberrant behavior, and substance abusers interchangeably, while others have considered chemical coping as a distinct entity along the spectrum of opioid misuse in the chronic pain and cancer pain settings.^{3–5} More recently, Del Fabbro defined chemical coping as the use of variable amounts of “opioid analgesics to cope with their psychological or spiritual distress.”⁶

Although “chemical coping” is used by clinicians and investigators, the lack of definitional clarity poses a barrier to effective clinical care, education, and research.^{7,8} A better understanding of the key features of chemical coping and definition can help us to communicate effectively among clinicians, make the proper diagnosis, and facilitate proper patient care. In this study we conducted a Delphi survey among palliative care and pain specialists internationally to identify a consensus definition for chemical coping with opioids. We also assessed warning signs for chemical coping.

Methods

An expert panel was organized consisting of 19 cancer pain specialists in Europe, the United States, South America, and Asia. This is a convenience sample selected based on the following criteria: a researcher who had published articles regarding cancer pain, opioids, addiction, and dependency or a physician who had been practicing palliative care full-time for more than three years after training and currently active in

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clinical practice. The survey was distributed through an e-mail with a link to an online survey system (SurveyMonkey®).

The Delphi survey approach consisted of two rounds of questions. The first round consisted of questions related to participants' characteristics, concepts regarding the definition of chemical coping, and related warning signs. Concepts and factors reflected in the questions and response choices were drawn from previous studies.^{9–11} The second round consisted of questions confirming the definition of chemical coping elicited from the results of the first survey (responses that had garnered agreement among at least 70% of the participants) and also re-asked questions that had an agreement level between 50% and 70% in the first round.

A five-point Likert scale ranging from “strongly disagree” to “strongly agree” was used to assess agreement with each proposed definition component, aberrant behavior, or warning sign. The participants were also given the opportunity to provide suggestions or comments in an open-ended question, especially in case of disagreement. These comments were taken into account to formulate the next round. The results from all respondents were collated and analyzed toward the development of consensus. Consensus in this study was defined a priori as agreement (i.e., “agree” or “strongly agree”) by a minimum of 70% of the experts. Survey results were analyzed with descriptive statistics.

Results

Survey response

We contacted 19 physicians to take part in the first round of the survey; 14 (74%) participated. The 14 first-round participants were invited to take part in the second round; 12 (86%) did so. Characteristics of the participants are detailed in Table 1.

Definition of chemical coping

In the first round, more than 70% of participants agreed with 4 of 12 suggested essential components of the definition of chemical coping (see Table 2).

Based on the results of the first survey, the definition of chemical coping was drafted as follows: “Chemical coping with opioids is the use of opioids to cope with emotional distress and is characterized by inappropriate and/or excessive opioid use.” In the second survey, the expert group reached a consensus for this definition, with 92% (11/12) agreement. The expert who disagreed with this suggested definition proposed the following alternative:

“Chemical coping with opioids is the use of opioids to self-manage distress and may be characterized by either therapeutic adherence or non-adherence, by any degree of pain control, and by an intense desire to continue the regimen to reduce emotional distress despite sustained adverse effects; the term overlaps with substance abuse, but should not be applied if the main driver for inappropriate or excessive opioid use is to avoid abstinence or if the compulsivity, loss of control, and harm associated with use justifies a diagnosis of substance dependence.”

Essential components that had agreement between 50% and 70% in the first round were included in the second Delphi round; however, none reached an agreement of more than 70% in the second round.

TABLE 1. DEMOGRAPHICS OF PARTICIPANTS

	<i>Number (percentage)</i>
Sex	
Male	13 (93%)
Female	1 (7%)
Age (years)	
30–39	5 (36%)
40–49	1 (7%)
50–59	7 (50%)
60–69	1 (7%)
Working place	
Research	1 (7%)
Clinical	4 (29%)
Both	9 (64%)
Specialties	
Palliative care	7 (50%)
Palliative care and general internal medicine	2 (14%)
Palliative care and anesthesiology	1 (7%)
Palliative care and family medicine	1 (7%)
Palliative care and psychiatry	1 (7%)
Oncology	1 (7%)
Psychiatry	1 (7%)
Years of experience in the field	
≥ 15 years	8 (57%)
≤ 10 – < 15 years	0
≤ 5 – < 10 years	4 (29%)
≤ 3 – < 5 years	2 (14%)
Country of origin	
United States	6 (43%)
European countries	5 (36%)
Japan	2 (14%)
Latin America	1 (7%)
% of time in clinical practice	
> 90%	1 (7%)
70%–89%	7 (50%)
50%–69%	1 (7%)
30%–49%	1 (7%)
10%–29%	4 (29%)
Self-assessment	
Scientific knowledge	
General	1 (7%)
Slightly specialized	2 (14%)
Moderately specialized	6 (43%)
Specialized	3 (43%)
Highly specialized	2 (14%)
Clinical experience	
General	2 (14%)
Slightly specialized	1 (7%)
Moderately specialized	3 (43%)
Specialized	6 (43%)
Highly specialized	2 (14%)

Important warning signs for chemical coping

The respondents selected depression; psychiatric disease; a history of substance abuse; a positive score for the Cut-down, Annoyed, Guilty, and Eye-opener (CAGE) alcoholism screening test; a history of alcoholism; and a history of smoking as important warning signs for chemical coping in

TABLE 2. AGREEMENT RATE FOR THE ESSENTIAL COMPONENTS FOR THE DEFINITION OF CHEMICAL COPING

	First round (n=14)		Second round (n=12)	
	Agreement	Selected for the definition	Agreement	Selected for the definition
Use opioids to cope with emotional stress^a	14 (100%)	Yes		Not asked
Inappropriate use	14 (100%)	Yes		Not asked
Emotional distress	14 (100%)	Yes		Not asked
Excessive use of medication (overuse)	13 (93%)	Yes		Not asked
Use in nonprescribed manner	9 (64%)	No	4 (33%)	No
Use medication despite harm	9 (64%)	No	5 (42%)	No
Aberrant behavior	8 (57%)	No	5 (42%)	No
Somatization	8 (57%)	No	3 (25%)	No
Opioids becoming center of patient's life	7 (50%)	No	5 (42%)	No
Compulsion to use opioids	7 (50%)	No	4 (33%)	No
Recurrent opioid seeking behavior	7 (50%)	No	6 (50%)	No
Function impaired by opioids	4 (29%)	No		Excluded

^aBold components had more than 70% agreement among the participants.

the first round (see Table 3); the results did not change in the second round.

Discussion

The Delphi process of this study (see online supplementary survey at www.liebertpub.com/jpm) reached the following consensus definition: "Chemical coping with opioids is the use of opioids to cope with emotional distress and is characterized by inappropriate and/or excessive opioid use." The warning signs selected by the expert group were related to psychiatric history, substance abuse, alcoholism, and smoking history.

Chemical coping is a commonly used but ill-defined term. Several groups have tried to describe it in the context of malignant chronic pain and cancer pain.^{2,12,13} The definition of chemical coping here is based on the consensus of a panel of international experts. Further research is needed to operationalize this definition and to assess its inter-rater reliability before this term can be adopted in clinical practice.

TABLE 3. CONSENSUS FOR THE IMPORTANT RISK FACTORS FOR CHEMICAL COPING (% OF AGREEMENT)

	First round (n=14)	Second round (n=12)
Depression^a	13 (93%)	Not asked
Psychiatric disease	12 (86%)	Not asked
History of substance abuse	12 (86%)	Not asked
CAGE positivity	11 (79%)	Not asked
History of alcoholism	11 (79%)	Not asked
Smoking history	10 (71%)	Not asked
Young age	9 (64%)	4 (33%)
History of sexual abuse	6 (43%)	2 (17%)
Cancer diagnosis	6 (43%)	1 (8%)
Specific cancer type	6 (43%)	3 (25%)
Male	5 (36%)	2 (17%)
Terminal cancer	3 (21%)	1 (8%)

CAGE, Cut-down, Annoyed, Guilty, and Eye-opener.

^aBold components had more than 70% agreement among the participants.

How is chemical coping related to addiction? Chemical coping is a wider concept than addiction. The American Society of Addiction Medicine defined addiction as "a primary, chronic disease of brain reward, motivation, memory and related circuitry.... This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors." Within our definition of chemical coping, it is important to recognize the spectrum of severity. In the mildest form, chemical coping denotes the occasional overuse of opioids to cope with emotional distress or suffering, without the craving, behavioral issues, and functional impairment that characterize addiction. In the most severe form, maladaptive chemical coping is essentially a component of addiction, because the lack of opioids results in severe emotional distress/dysphoria that in turn drives the excessive and inappropriate use of opioids and dysfunctional behaviors. Thus, for patients with warning signs or suspected of chemical coping, the health care team should be proactive in addressing the patients' emotional needs, providing proper education on safe opioid use, and monitoring them for aberrant behaviors.

Until now, most of the studies concerned with warning signs of chemical coping have been performed in patients with chronic noncancer pain. For cancer pain, our respondents agreed that important warning signs for chemical coping were depression (highest level of agreement), followed by psychiatric disease, history of substance abuse, positive CAGE screening, history of alcoholism, and history of smoking. We previously reported that undocumented alcoholism was frequent in patients with advanced cancer, and that it was associated with prolonged use of opioids in head and neck cancer patients after completion of chemoradiation, as well as increased pain expression and higher opioid doses.¹⁴⁻¹⁹ In line with the first report of chemical coping,² most respondents in our study agreed that alcoholism is a warning sign for chemical coping. Although there have been no reports suggesting a relationship between chemical coping and a history of smoking, respondents also suggested smoking as a warning sign for chemical coping. Psychiatric disease, which was identified as a warning sign for chemical coping in our study, also has been consistently reported as a warning sign for opioid-related problems in noncancer and cancer

patients.^{14,16,20–23} Warning signs identified in our study may support further research to screen for chemical coping and develop appropriate interventions.

Our study had a relatively high response rate (first round: 14/19, 74%; second round: 12/19, 63%) and a short time interval between the first invitation and completion of the second round. However, inherent in the Delphi study design itself, this study has some limitations.²⁴ The number of participants was small and was based on a convenient sample, which could introduce bias.²⁴

To our knowledge, this is the first attempt to reach a consensus on definition of and warning signs for chemical coping among experts in pain management and palliative care. Once operationalized, this consensus definition may help clinicians and researchers alike to identify individuals who are misusing opioids, to communicate with each other clearly, and to devise proper management strategies for optimizing symptom control while minimizing harms associated with opioid misuse.

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References

- Caraceni A, Hanks G, Kaasa S, et al.: Use of opioid analgesics in the treatment of cancer pain: Evidence-based recommendations from the EAPC. *Lancet Oncol* 2012;13:e58–e68.
- Bruera E, Moyano J, Seifert L, et al.: The frequency of alcoholism among patients with pain due to terminal cancer. *J Pain Symptom Manage* 1995;10:599–603.
- Modesto-Lowe V, Girard L, Chaplin M: Cancer pain in the opioid-addicted patient: Can we treat it right? *J Opioid Manag* 2012;8:167–175.
- Kirsh KL, Jass C, Bennett DS, et al.: Initial development of a survey tool to detect issues of chemical coping in chronic pain patients. *Palliat Support Care* 2007;5:219–226.
- Pohl M, Smith L: Chronic pain and addiction: Challenging co-occurring disorders. *J Psychoactive Drugs* 2012;44:119–124.
- Del Fabbro E: Assessment and management of chemical coping in patients with cancer. *J Clin Oncol* 2014;32:1734–1738.
- Hui D, Nooruddin Z, Didwaniya N, et al.: Concepts and definitions for ‘actively dying,’ ‘end of life,’ ‘terminally ill,’ ‘terminal care,’ and ‘transition of care’: A systematic review. *J Pain Symptom Manage* 2014;47:77–89.
- Hui D, Mori M, Parsons HA, et al.: The lack of standard definitions in the supportive and palliative oncology literature. *J Pain Symptom Manage* 2012;43:582–592.
- Starr TD, Rogak LJ, Passik SD: Substance abuse in cancer pain. *Curr Pain Headache Rep* 2010;14:268–275.
- Koob GF, Volkow ND: Neurocircuitry of addiction. *Neuropsychopharmacology* 2010;35:217–238.
- American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* Text Revision DSM-IV-TR. American Psychiatric Association, 2000.
- Savage SR, Joranson DE, Covington EC, et al.: Definitions related to the medical use of opioids: Evolution towards universal agreement. *J Pain Symptom Manage* 2003;26:655–667.
- Passik SD, Kirsh KL, McDonald MV, et al.: A pilot survey of aberrant drug-taking attitudes and behaviors in samples of cancer and AIDS patients. *J Pain Symptom Manage* 2000;19:274–286.
- Edlund MJ, Steffick D, Hudson T: Risk factors for clinically recognized opioid abuse and dependence among veterans using opioids for chronic non-cancer pain. *Pain* 2007;129:355–362.
- Sullivan MD, Edlund MJ, Fan MY, et al.: Risks for possible and probable opioid misuse among recipients of chronic opioid therapy in commercial and Medicaid insurance plans: The TROUP Study. *Pain* 2010;150:332–339.
- Boscarino JA, Rukstalis M, Hoffman SN: Risk factors for drug dependence among out-patients on opioid therapy in a large US health-care system. *Addiction* 2010;105:1776–1782.
- Parsons HA, Delgado-Guay MO, El Osta B, et al.: Alcoholism screening in patients with advanced cancer: Impact on symptom burden and opioid use. *J Palliat Med* 2008;11:964–968.
- Dev R, Parsons HA, Palla S, et al.: Undocumented alcoholism and its correlation with tobacco and illegal drug use in advanced cancer patients. *Cancer* 2011;117:4551–4556.
- Kwon JH, Hui D, Chisholm G, Bruera E: Predictors of long-term opioid treatment among patients who receive chemoradiation for head and neck cancer. *Oncologist* 2013;18:768–774.
- Angelescu DL, Ehrentraut JH, Faughnan LG: Opioid misuse and abuse: Risk assessment and management in patients with cancer pain. *J Natl Compr Canc Netw* 2013;11:1023–1031.
- Edlund MJ, Sullivan M, Steffick D, et al.: Do users of regularly prescribed opioids have higher rates of substance use problems than nonusers? *Pain Med* 2007;8:647–656.
- Wasan AD, Butler SF, Budman SH, et al.: Psychiatric history and psychologic adjustment as risk factors for aberrant drug-related behavior among patients with chronic pain. *Clin J Pain* 2007;23:307–315.
- Wu L-T, Woody GE, Yang C, et al.: Abuse and dependence on prescription opioids in adults: A mixture categorical and dimensional approach to diagnostic classification. *Psychol Med* 2011;41:653–664.
- Hsu C-C, Brian AS: The Delphi technique: Making sense of consensus. *Practical Assessment, Research & Evaluation* 2007;12:1–8.

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