BEREAVEMENT AND ADDICTION: COMPLICATED GRIEF SYMPTOMS, PSYCHOPATHOLOGY AND ASSOCIATED VARIABLES IN A SUBSTANCE USE DISORDER SAMPLE

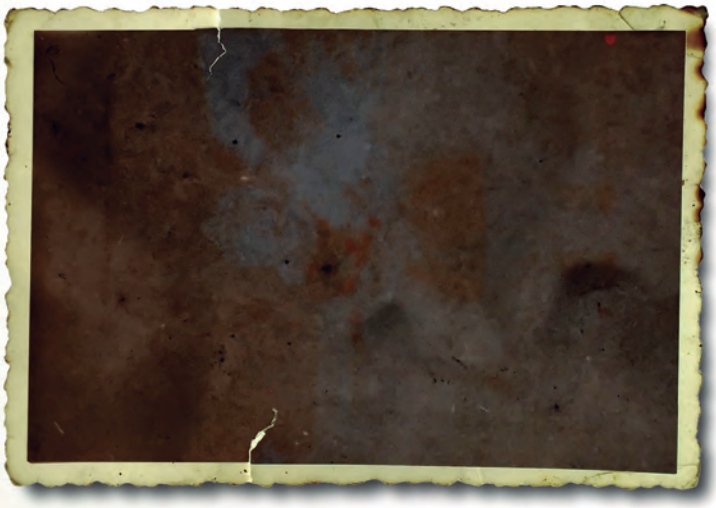
Laura Masferrer Boix

Universitat de Girona

DOCTORAL THESIS

BEREAVEMENT AND ADDICTION:

Complicated Grief symptoms, psychopathology and associated variables in a Substance Use Disorder sample



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2017

"Just because it's black in the dark, doesn't mean there's no colors"

Lelah Pourkarim

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IN A SUBSTANCE USE DISORDER SAMPLE

PhD candidate: Laura Masferrer Boix

2017

PhD Program in Psychology, Health and Quality of Life

Directed by Dr. Beatriz Caparrós Caparrós

Report submitted for the Doctorate degree from the University of Girona.

International PhD Mention

Dedication

Dedicated to all those people who live and suffer Substance Use Disorder

Agraïments / Acknowledgments

A la Dra. Bea Caparrós per dirigir aquesta tesi. Perquè ha cregut i ha donat ales al meu projecte. Pel seu valuós suport al llarg de tot el procés.

Al Dr. Josep Garre pel seu assessorament estadístic.

Dr. Stroebe and Dr. Schut, for opening new horizons in the exciting world of scientific research.

Dr. Mancini, for encouraging me and sharing his rigour and intellectual concern.

A la Rosa, per transmetre'm la passió per aprendre i la importància de ser constant.

A l'Adam per la disponibilitat, la paciència, el suport i els cafès.

A en Gabriel per la seva valuosa ajuda bibliogràfica i les afables converses entre passadissos.

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Gràcies a totes les persones usuàries del CAS Teresa Ferrer que van compartir les seves vivències de pèrdua. A totes les persones del grup control que van regalar-me el seu temps.

A en Jordi, ell va obrir-me la porta a treballar al CAS on he pogut copsar la realitat de la problemàtica de l'addicció.

A en Jordi C, per ser un lluitador a favor de la recerca en l'àmbit de la psicologia.

A l'Arnau i la Laia per descobrir-me la màgia dels números.

A l'Elisenda, per la seva amistat i el seu un suport incondicional.

A l'Ernest, perquè m'ha regalat la seva serenor en aquest camí.

Tony to accompany me in the TA world.

A la colla del Claret, al ND9, a la Laura, l'Eva, la Clara, la Loida, en Lluís, en Joan, en Xevi, en Martí, en Jesús i en Ramon perquè durant tot aquest temps m'han escoltat i encoratjat a seguir endavant.

Als meus pares i al meu germà, per ser-hi sempre i viure la part més dura de la recerca.

Per tots els que heu compartit aquest procés...senzillament, gràcies!

List of Publications

SCIENTIFIC PUBLICATIONS (chronological order) (Impact factor of JCR)

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2015). Is there any relationship between drug users' bereavement and substance consumption? *Heroin addiction & related clinical problems 17(6)*, 23-30 (IF(2015): 0.579)

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Clinical syndromes, complicated grief and substance use disorder. *Heroin addiction & related clinical problems, 18*(4s1), 37-44 (IF(2015): 0.579)

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Risk of suicide: its occurrence and related variables among bereaved substance users. *Journal of Substance Use*, *21*, 191-97. doi: 10.3109/14659891.2014.998733 (IF(2015): 0.893)

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers. *Addiction Research and Theory Journal*. doi: 10.1080/16066359.2017.1285912 (IF(2015): 1.252).

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Factor structure and concurrent construct validity of ICG among bereaved substance users. *Actas Españolas de Psiquiatría, 45*(2), 47-55 (IF(2015): 1.2)

Masferrer, L., & Caparrós, B. (2017). Risk of suicide and Personality disorders among substance users. *Special Issue for International Journal of Environmental Research and Public Health,* 14(3), E316. (IF(2015): 2.035)

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A. D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

List of Abbreviations

APA	American Psychiatric Association
BAI	Beck Anxiety Inventory
BDI	Beck Depression Inventory
CAS	Centre d'Atenció i Seguiment
CG	Complicated Grief
CSI	Coping Strategies Inventory
DC	Duelo Complicado
DIF	Differential Item Functioning
DSM	Diagnostic and Statistical Manual
Fmri	Functional magnetic resonance imaging
IAS	Institut d'Assistència Sanitària
ICG	Inventory of Complicated Grief
IDC	Inventario de Duelo Complicado
IED	Inventario de Experiencias de Duelo
MCMI	Millon Multiaxial Clinical Inventory
MDD	Major Depressive Disorder
MMPI	Minnesota Multiphasic Personality Inventory
MSPSS	Multidimensional Scale of Perceived Social Support
NEO-FFI	Five Factor Inventory
PGD	Prolonged Grief Disorder
PTSD	Post Traumatic Stress Disorder
PD	Personality Disorder
RS	Risk of Suicide
SUD	Substance Use Disorder
SPSS	Statistical Package for the Social Sciences
PCA	Principal Component Analysis
TUS	Trastorno por Uso de Sustancias

List of Tables

Universitat de Girona

Dra. Beatriz Caparrós Caparrós from the Psychology Department of the University of Girona,

CERTIFY

That the study entitled *Bereavement and Addiction: Complicated Grief Symptoms, Psychopathology and Associated Variables in a Substance Use Disorder Sample* presented by Laura Masferrer Boix has been completed under my supervision to obtain a doctoral degree, and meets the requirements to opt for an International Doctorate.

For all intents and purposes, I hereby sign this document

Girona, June 2nd, 2017

Beatriz Caparrós Caparrós

Universiteit Utrecht

Certificate

Hereby we declare that

Laura Masferrer

has worked at the

Department of Clinical and Health Psychology of Utrecht University,

The Netherlands,

in the period from October 1, 2013 until November 15, 2013.

In that period Laura Masferrer collaborated closely with

Prof. Dr. Margaret Stroebe and Dr. Henk Schut

In preparation of her dissertation on

Addiction and Bereavement

Prof. Dr. Margaret Stroebe

Dr. Henk Schut

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May 18, 2016

Department of Psychology
University of Girona
Plaça de Sant Domènec
3, 17004 Girona
Spain

To whom it may concern:

This letter confirms that Laura Masferrer Boix successfully completed a term of study as a visiting research scholar at Pace University from March 30, 2016 to May 20, 2016. She worked closely with me during that time, collaborating on my research, participating in doctoral-level seminars, conducting background research, interacting with other doctoral students in my laboratory, and developing a number of future collaborative projects. In addition, she gave a talk on her research to doctoral faculty and students.

It would be my pleasure to provide any further information regarding her stay here. I can be reached at amancini@pace.edu or 914-773-3475.

Sincerely,

Anthony D Mancini, PhD
Associate Professor

TABLE OF CONTENTS

ABSTRACT

The loss of a loved one is a universal experience to which the majority of people adjust adequately. A substantial minority do not follow the natural process and, despite the passing of time, they continue to live with great discomfort and in an intense situation developing symptomatology of Complicated Grief (CG). Complicated Grief has been defined as a deviation from the normal (in cultural and societal terms) grief experience in either time course, intensity, or both, entailing a chronic and more intense emotional experience or an inhibited response, which either lacks the usual symptoms or in which onset of symptoms is delayed (Stroebe, Schut, & Stroebe, 2007).

The principal aim of this research was to describe the presence of symptoms of Complicated Grief as well as psychopathology and other significant variables among a Substance Use Disorder (SUD) sample. The sample was formed by 196 bereaved SUD patients and the control group was made up of 100 bereaved non-addicted participants. Sociodemographic variables, drug related characteristics, bereavement, suicide related variables, psychopathology, social support, and coping strategies were examined. CG symptoms were measured with the Spanish version of the Inventory of Complicated Grief (ICG). Risk of suicide was determined by the Spanish version of the Risk of Suicide (RS). Personality disorders and Clinical syndromes were assessed with the Spanish version of the Millon Clinical Multiaxial Inventory (MCMI-III). Social support was investigated using the Spanish version of the Multidimensional Scale of Perceived Social Support (MSPSS). Coping strategies were assessed by the Coping Strategies Inventory (CSI).

The presence of symptoms of CG among the bereaved SUD sample was 34.2% in comparison with only 5% from the control group. The specific factors associated with symptomatology of CG were: loss of a sibling, reported traumatic death, serving time in prison and stated lower level of social support. Participants with CG symptoms reported higher frequency of Anxiety (53.7%), Major Depressive Disorder (MDD) (17.9%) and Post Traumatic Stress Disorder (PTSD) (9%). MDD and PTSD are highly associated with symptomatology of CG. Moreover, CG was associated with Schizotypal, Depressive, Borderline and Paranoid personality disorders. It was remarkable to note that 61.2% of participants reported risk of suicide and 32.1% suicide attempts. Being separated or divorced, widowed, unemployed, informing of low social support, serving time in prison and reporting symptoms of CG were those variables associated with the risk of suicide. Related to personality disorders, Avoidant, Borderline, Schizotypal and Depressive were associated with the risk of suicide.

The present research pointed out the association between CG symptomatology and SUD. It highlights the need for particular and personalized assessments taking into account several factors related to the SUD population in order to design specific, appropriate and rigorous interventions.

RESUM

La pèrdua d'una persona estimada és una experiència universal que la majoria d'individus viuen adaptativament. Una petita minoria no segueix el procés natural i malgrat el pas del temps, continua vivint la pèrdua amb un elevat malestar desenvolupant simptomatologia de Dol Complicat (DC). El Dol Complicat ha estat definit com una desviació de la vivència adaptativa del dol (en termes culturals i socials) ja sigui a nivell de temps, d'intensitat, o d'ambdós factors. Aquesta vivència suposa una experiència emocional crònica i més intensa o una resposta inhibida, que o bé no té els símptomes habituals o bé l'inici dels símptomes es retarda (Stroebe, Schut, i Stroebe, 2007).

L'objectiu principal d'aquesta investigació va ser descriure la presència de símptomes de dol complicat, psicopatologia i altres variables rellevants en una mostra que presentra Trastorn per Ús de Substàncies (TUS). La mostra estava formada per 196 pacients TUS que havien patit una pèrdua, el grup de control va estar composat per 100 participants en dol no addictes. Es van examinar les variables sociodemogràfiques, característiques relacionades amb les drogues, dol, variables relacionades amb el suïcidi psicopatologia, suport social, i estratègies d'afrontament. Els símptomes de Dol Complicat es van mesurar amb la versió espanyola de l'Inventari de Dol Complicat (ICG). El risc de suïcidi es va determinar mitjançant la versió espanyola del Risc de Suïcidi (RS). Trastorns de la personalitat i síndromes clíniques es van avaluar amb la versió espanyola del Millon Clinical Multiaxial Inventory (MCMI-III). El suport social es va avaluar a través de la versió castella del Multidimensional Scale of Perceived Social Support (MSPSS). Les estrategies d'afrontament es van mesurar amb l'adaptació al castellà del Coping Strategies Inventory (CSI).

La presència de símptomes de Dol Complicat entre la mostra TUS va ser 34,2% en comparació amb només el 5% del grup control. Els factors específics associats amb simptomatologia de Dol Complicat van ser: la pèrdua d'un germà, circumstàncies traumàtiques de la pèrdua, haver estat temps a la presó i percebre un menor nivell de suport social. Els participants amb símptomes de Dol Complicat van informar d'una major freqüència d'Ansietat (53,7%), de Depressió Major (17,9%) i Trastorn d'Estrès Posttraumàtic (9%). La depressió major i el trastorn d'estrès posttraumàtic estan altament relacionats amb simptomatologia de DC. D'altra banda, el Dol Complicat està associat amb els següents trastorns de personalitat: Esquizotípic, Depressiu, Limit i Paranoide. Va ser notable observar que el 61,2% dels participants van informar de risc de suïcidi i el 32,1% d' intents de suïcidi. Estar separat o divorciat, vidu, sense feina, informar de baix suport social, haver estat complint condemna a la presó i verbalitzar simptomatologia de Dol Complicat van ser les variables

associades amb el risc de suïcidi. Respecte els trastorns de la personalitat, els trastorns per Evitació, Límit, Esquizotípic i Depressiu són els trastorns que s'associen amb el risc de suïcidi.

La present investigació assenyala l'associació entre simptomatologia de Dol Complicat i TUS. Es destaca la necessitat d'avaluacions particulars i personalitzades tenint en compte diversos factors relacionats amb la població TUS per tal de dissenyar intervencions específiques, adequades i rigoroses.

RESUMEN

La pérdida de un ser querido es una experiencia universal que la mayoría de personas realizan de forma adaptativa. Una pequeña minoría no sigue el proceso natural y, a pesar del paso del tiempo, siguen viviendo la pérdida con un elevado malestar desarrollando sintomatología de Duelo Complicado (DC). El Duelo Complicado ha sido definido como una desviación de la vivencia adaptativa de duelo (en términos culturales y sociales) ya sea a nivel de tiempo, de intensidad, o en ambos factores, lo que supone una experiencia emocional crónica y más intensa o una respuesta inhibida, que o bien no tiene los síntomas habituales o bien en el inicio de los síntomas se retrasa (Stroebe, Schut, y Stroebe, 2007).

El objetivo principal de esta investigación fue describir la presencia de síntomas de duelo complicado, así como la psicopatología y otras variables importantes entre una muestra con Trastorno por Uso de Sustancias (TUS). La muestra estaba formada por 196 pacientes TUS que habían sufrido una pérdida y el grupo de control estuvo compuesto por 100 participantes en duelo no adictos. Se examinaron las variables sociodemográficas, características relacionadas con las drogas, el duelo, variables relacionadas con el suicidio, psicopatología, apoyo social y estrategias de afrontamiento. Los síntomas de Duelo Complicado se midieron con la versión española del Inventario de Duelo Complicado (ICG). El riesgo de suicidio se determinó mediante la versión española del Riesgo de Suicidio (RS). Los trastornos de la personalidad y síndromes clínicos se evaluaron con la versión española del Millon Clinical Multiaxial Inventory (MCMI-III). El apoyo social se evaluó con la versión española del Multidimensional Scale of Perceived Social Support (MSPSS). Las estrategias de afrontamiento se midieron con la versión española del Coping Strategies Inventory (CSI).

La presencia de síntomas de Duelo Complicado entre la muestra TUS fue 34,2% en comparación con el sólo 5% del grupo control. Los factores específicos asociados con sintomatología de Duelo Complicado fueron: la pérdida de un hermano, circunstancias traumáticas de la pérdida, haber estado tiempo en prisión y percibir un menor nivel de apoyo social. Los participantes con síntomas de Duelo Complicado informaron de una mayor frecuencia de ansiedad (53,7%), de depresión mayor (17,9%) y trastorno de estrés postraumático (9%). La depresión mayor y trastorno de estrés postraumático están altamente relacionados con sintomatología de Duelo Complicado. Asimismo, el Duelo Complicado está asociado con los siguientes trastornos de personalidad: Esquizotípico, Depressivo, Límite y Paranoide. Fue notable observar que el 61,2% de los participantes informaron

de riesgo de suicidio y el 32,1% de intentos de suicidio. Estar separado o divorciado, viudo, sin trabajo, informando de bajo apoyo social, haber estado cumpliendo condena en prisión y verbalizar sintomatología de Duelo Complicado fueron las variables asociadas con el riesgo de suicidio. Respecto a los trastornos de la personalidad, los trastornos por Evitación, Límite, Esquizotípico y Depresivo son los trastornos que se asocian con el riesgo de suicidio.

La presente investigación señala la asociación entre sintomatología de Duelo Complicado y TUS. Se destaca la necesidad de evaluaciones particulares y personalizadas teniendo en cuenta diversos factores relacionados con la población TUS para diseñar intervenciones específicas, adecuadas y rigurosas.

PHD AS A COMPENDIUM OF ARTICLES

The overarching aim of this doctoral dissertation was to describe the presence of Complicated Grief symptoms among a clinical sample. Therefore, the main axis is the relationship between Complicated Grief symptomatology and Substance Use Disorder. In relation to the specific objectives of each article, other secondary variables were analyzed such as social support and coping strategies.

We also reported different relevant characteristics in order to gain a better understanding of this phenomenon. On account of this, we divided the research into three interrelated themes associated with complications in bereavement. First, we described bereavement variables which include the frequency of CG symptoms, the analysis of psychometric properties of the instrument to assess the CG (ICG) among the addicted clinical sample, and the relationship between patients' bereavement and their own substance consumption. The second topic was associated with psychopathology and symptoms of CG, which involved clinical syndromes as well as personality disorders and CG symptomatology. And finally, the last question was linked to the risk of suicide divided between the frequency of risk of suicide and CG symptoms and on the other hand, the link between risk of suicide and personality disorders among the clinical SUD sample.

Bereavement variables

- ✓ Frequency of CG symptomatology

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers. *Addiction Research and Theory Journal.* doi: 10.1080/16066359.2017.1285912 (IF 2015: 1.252)

- ✓ Psychometric properties of ICG

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Factor structure and concurrent construct validity of ICG among bereaved substance users. *Actas Españolas de Psiquiatría, 45*(2), 47-55. (IF 2015: 1.2)

- ✓ Drug users' bereavement and their own substance consumption

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2015). Is there any relationship between drug users' bereavement and substance consumption? *Heroin addiction & related clinical problems 17 (6)*, 23-30 (IF 2014: 0.643).

Psychopathology and symptoms of CG

- ✓ Clinical syndromes and CG symptoms

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Clinical syndromes, complicated grief and substance use disorder. *Heroin addiction & related clinical problems, Heroin addiction & related clinical problems, 18* (4s1), 37-44 (IF 2015: 0.579).

- ✓ Personality disorders and symptoms of CG

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A.D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

Risk of suicide and bereavement

- ✓ Frequency of risk of suicide and symptoms of CG

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Risk of suicide: its occurrence and related variables among bereaved substance users. *Journal of Substance Use*, *21*, 191-97. doi: 10.3109/14659891.2014.998733 (IF 2014: 0.811).

- ✓ Risk of suicide, dysfunctional patterns of personality among bereaved SUD

Masferrer, L., & Caparrós, B. (2017). Risk of suicide and Personality disorders among substance users. Special Issue for *International Journal of Environmental Research and Public Health, 14*(3). doi: 10.3390/ijerph14030316 (IF 2015: 2.035)

Universitat de Girona

Dr. B. Caparrós as co-author of the following articles:

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2015). Is there any relationship between drug users' bereavement and substance consumption? *Heroin addiction & related clinical problems 17(6)*, 23-30

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Clinical syndromes, complicated grief and substance use disorder. *Heroin addiction & related clinical problems, 18*(4s1), 37-44

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2016). Risk of suicide: its occurrence and related variables among bereaved substance users. *Journal of Substance Use*, *21*, 191-97. doi: 10.3109/14659891.2014.998733

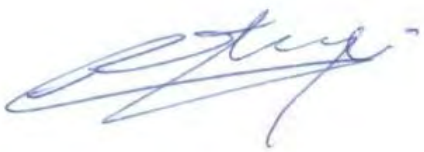
Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers. *Addiction Research and Theory Journal*. doi: 10.1080/16066359.2017.1285912

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Factor structure and concurrent construct validity of ICG among bereaved substance users. *Actas Españolas de Psiquiatría, 45*(2), 47-55

Masferrer, L., & Caparrós, B. (2017). Risk of suicide and Personality disorders among substance users. *Special Issue for International Journal of Environmental Research and Public Health,* 14(3), E316.

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A. D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

I accept that Ms. Laura Masferrer Boix presents the mentioned articles as principal author and as part of her doctoral thesis and that these articles cannot be part of another doctoral thesis. In witness whereof, the parties signed this agreement, showing their intent to be bound thereby. And you have the constant and timely effects, sign this document.



Girona, 28 of June 2017

Universitat de Girona

Dr. Garre-Olmo as co-author of the following articles:

Masferrer, L., Garre-Olmo, J. & Caparrós, B. (2015). Is there any relationship between drug users' bereavement and substance consumption? *Heroin addiction & related clinical problems 17(6)*, 23-30

Masferrer, L., Garre-Olmo, J. & Caparrós, B. (2016). Clinical syndromes, complicated grief and substance use disorder. *Heroin addiction & related clinical problems, 18*(4s1), 37-44

Masferrer, L., Garre-Olmo, J. & Caparrós, B. (2016). Risk of suicide: its occurrence and related variables among bereaved substance users. *Journal of Substance Use, 21*, 191-97. doi: 10.3109/14659891.2014.998733

Masferrer, L., Garre-Olmo, J. & Caparrós, B. (2017). Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers. *Addiction Research and Theory Journal*. doi: 10.1080/16066359.2017.1285912

Masferrer, L., Garre-Olmo, J. & Caparrós, B. (2017). Factor structure and concurrent construct validity of ICG among bereaved substance users. *Actas Españolas de Psiquiatría, 45*(2), 47-55

I accept that Ms. Laura Masferrer Boix presents the mentioned articles as principal author and as part of her doctoral thesis and that these articles cannot be part of another doctoral thesis.

In witness whereof, the parties signed this agreement, showing their intent to be bound thereby.

And you have the constant and timely effects, sign this document.

Girona, 20th of June 2017

Universitat de Girona

Dr. Gavaldà as co-author of the following article:

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A. D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

I accept that Ms. Laura Masferrer Boix presents the mentioned articles as principal author and as part of her doctoral thesis and that these articles cannot be part of another doctoral thesis.

In witness whereof, the parties signed this agreement, showing their intent to be bound thereby.

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Girona, 26 of June 2017

Universitat de Girona

Laia Figueras-Bonachi as co-author of the following article:

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A. D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

I accept that Ms. Laura Masferrer Boix presents the mentioned articles as principal author and as part of her doctoral thesis and that these articles cannot be part of another doctoral thesis.

In witness whereof, the parties signed this agreement, showing their intent to be bound thereby.

And you have the constant and timely effects, sign this document.

Girona, 29 of June 2017

Universitat de Girona

Dr. Mancini as co-author of the following articles:

Masferrer, L., Figueras-Bonachi, L., Gavaldà-Miralles, A., Mancini, A. D., & Caparrós, B. (2017). Understanding complicated grief symptoms and personality disorders among bereaved substance users: a network analysis approach. Manuscript submitted for publication.

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Girona, th of June 2017

1. INTRODUCTION

"When my father died I drank more. It was a denial of pain. When you feel pain you have a resource that helps to mitigate it, that is the drug "(patient, 50 years old, who lost his father at the age of 38)

"When you drink alcohol to face a situation that hurts, alcohol makes you feel better (patient, 45 years old, who lost her father when she was 38).

Onset

In the last few years, the study of risk factors related to the initiation of drug consumption, maintaining and relapsing into addiction has risen in special importance. However, the bereavement process among patients diagnosed with a Substance Use Disorder (SUD) was little studied in scientific literature, despite the fact that it is a daily observed reality in clinical practice.

Working as a psychologist at a Public Addiction Centre (Centre d'Atenció i Seguiment, CAS Teresa Ferrer- CAS Ripoll, Institut Assistència Sanitària (IAS)) has allowed me to understand how patients cope with their everyday illness. Grasping the complexity of the disease is highly significant when you carry out rigorous and effective psychotherapeutic work within the framework of psychological intervention in outpatient treatment. In the first psychological evaluation sessions when questioning about relationships and family dynamics, a genogram is built together with the patient. At that moment during the exploratory process, I became aware of the large number of patients who had experienced many losses in their life (suicide of a father or a mother, brother or sister's death by overdose ...). It was then that I asked myself what was the real role played by the loss of a first-degree family member or best friend among SUD people.

Bearing in mind that the basis of scientific research is to supply to professionals a tool to progress and provide the necessary theoretical knowledge about illnesses, improve the quality of life of patients, and design psychotherapeutic intervention programs, the topic of the current research is extremely relevant in terms of clinical professional practice.

Both in literature review and different international meetings of psychopathology and dual pathology, the obvious lack of research in this field has been made explicit. For this reason, I think it is highly necessary to carry out the present study. If it can be shown that the experience of bereavement can become an incident factor (among other factors in a complex system) related to

SUD, the usefulness will be shown as relevant when working on bereavement in the treatment of SUD for those cases with maladaptive symptomatology.

1. INTRODUCTION

We are addressing a topic of overwhelming complexity and, accordingly, we will present the most important and significant concepts disclosed in this doctoral dissertation. It is a controversial issue because an SUD diagnosis is associated with a greater vulnerability to present other emotional problems and affective pathologies. Moreover, people who have experienced a bereavement of a significant person are prone to the risk of increased comorbidity which sheds light on the seriousness of the SUD illness. My own experience as a psychologist has shown me the importance of this research as has been expressed above by two patients who suffer severe alcohol dependence and verbalized the impact of a first degree family death.

In this section we will introduce the main topics studied in the current research: CG symptomatology, SUD diagnosis, as well as associated problems and comorbidity.

1.1 Complicated Grief symptomatology

The death of a significant person is one of the most stressful life-events (Kendler et al., 2002; Kestilä et al., 2008; Rugani et al., 2011). Bereavement reactions can lead to psychological and functional impairment, such as intense suffering and pain, heightened general distress, decrements in physical health, work-related difficulties and emotional distress (Eisma, 2015; Stroebe et al., 2007). In this sense, it is important to describe grief as a natural process. Sometimes, however, a sizeable minority does not follow the natural process and, despite the passing of time, they continue to live with great discomfort and in an intense situation.

It has consistently been shown that a subset of bereaved individuals, approximately 10-15% of the total, experience persistent and disabling symptoms (Mancini, Griffin, & Bonanno, 2012; Prigerson & Jacobs, 2001; Shear & Shair, 2005) which are known as complicated grief symptomatology (Stroebe et al., 2013). Complicated Grief (CG) is a clinical syndrome characterised by the difficulty of accepting the loss and adjusting to its consequences, intense feeling of yearning, longing or emotional pain, frequent preoccupying thoughts and memories of the deceased person, persistent separation distress, difficulties in moving on without the deceased and substantial impairment to social and role obligations (Bonanno & Kaltman, 2001; Shear, 2015).

There is great diversity in the terminology regarding this disorder (Bonanno & Kaltman, 2001; Prigerson, Vanderwerker, & Maciejewska 2007). Some researchers call it "*chronic grief*", others

"*complicated psychiatric* or *pathological grief*". Recently, several authors have proposed the term "*Prolonged Grief Disorder"* (PGD), defined by maladaptive manifestations of grief (Prigerson et al., 2009), thus avoiding possible terminological confusion between posttraumatic stress disorder with the term "traumatic" mourning (Prigerson et al., 2007). Suffice to say though that the process of bereavement is complex enough not to reduce it to a single nosological entity. As Rando (2013) wrote, assuming PGD as the only manifestation of complicated grief may even become harmful, as there is a reductionism of the phenomenon of loss. In DSM 5 (APA, 2013), CG symptomatology is labeled "*Persistent Complex Bereavement Disorder*", and it is integrated in the appendix listing, "Conditions for further study". Regarding the consideration of the criteria set in the DSM-5, caution is required because there are numerous criticisms which have emerged with the proposed complex disorder associated with persistent grief, due to the lack of empirical support, as well as the heterogeneity of the criteria mentioned (Boelen & Prigerson, 2012).

According to O'Connor (2013), affective disorders are best described in continuous rather than discrete categories and therefore CG symptomatology can also be understood better in this regard. Furthermore, Burke and Neimeyer (2013) believe that, although there are difficulties in establishing a cut-off point, current research suggests that bereavement can be evaluated on a continuum which spans from a low level of pain to severe pain.

Since the nineties, the literature has grown around the set of maladaptive manifestations related to CG symptoms differing from Anxiety or MDD in the general population (Boelen & van den Bout, 2007). The symptoms of CG predispose survivors to have a significant reduction in their quality of life and health effects (Boelen & van den Bout, 2007). Therefore, the emergence of this new clinical category, CG symptomatology, highlights the need to specify and clarify the differences with other nosological entities as well as to properly diagnose and design the most appropriate psychotherapeutic methods for each person. For this reason, we present a comparison with two different clinical disorders (MDD and PTSD) which share the most similar symptoms, to clarify differential diagnosis based on CG symptomatology. Note that K'Delant (2010) used the term PGD instead of CG following the Psychiatric Academy of Massachusetts (Table 1).

Table 1.

Comparison of characteristics relating to MDD, PTSD and PGD (K'Delant, 2010.)

MDD symptoms	PGD symptoms		PTSD symptoms
	Related to MDD	**Related to PTSD**	
loss of attachment figures	an intense feeling of closeness in relationship with the deceased	event provocative: loss	event provocative: threat
loss paralyses interest and enjoyment	interests in relation to loss and enjoyment with the deceased	primary emotion: sadness	primary emotion: fear
weak self-esteem and shame	incessant thoughts and memories about the deceased	intrusive thoughts about the deceased	intrusive thoughts about the event
social isolation	responsibility for the carelessness contributed towards the deceased	avoidance based on the loss	avoidance based on fear
	avoidance of activities and situations reminiscent of the deceased persons	nightmares are rare	nightmares important
		memories relating to deceased, bitterness	memories relating to the fact evoke fear or anger
		research associate close to nostalgia	proximity search

As shown in Table 1, several studies demonstrate that the symptoms of CG are separable from other psychiatric diagnoses such as MDD, Anxiety or PTSD (Boelen, van de Schoot, van den Hout, & de Keijser, 2010; Boelen, van den Bout, & Keijser 2003; Golden & Dalgleish, 2010; Lichtenthal, Cruess, & Prigerson, 2004). These studies make a major contribution to understanding that the different syndromes are not isomorphic and the core symptom clusters are empirically dissociable (Golden & Dalgleish, 2010).

1.2 Substance Use Disorders

The principal sample of our research consists of patients with SUD and therefore we used the diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders*, DSM-IV-TR. The present study is based on the criteria diagnosis related to DSM-IV-TR, edition valid at the time of initiating the investigation. The DSM-IV-TR identified a substance dependency as a maladaptive pattern of substance use, leading to clinically significant impairment or distress that is characterised by tolerance, withdrawal, a persistent desire, or unsuccessful efforts to cut down or control substance use, taking larger amounts of the substance, or over a longer period than was previously intended. A great deal of time is spent on activities necessary to obtain the substance. Important social, occupational, or recreational activities are given up or reduced because of substance use and the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem which is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine-induced Depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption) (APA, 2002).

As mentioned above, we used the diagnostic criteria of DSM-IV-TR but comparing it to the 5th edition of the diagnostic manual (DSM-5) we can see that the fifth edition combines the DSM-IV-TR categories related to substance abuse and substance dependence. DSM-5 refers to Substance Use Disorders, which are defined as mild, moderate, or severe to indicate the level of severity. According to APA (2013) the criteria of this new disorder have not only been combined, but strengthened. In DSM-IV the distinction between abuse and dependence was based on the definition of abuse as a mild or early phase and dependence as the most severe manifestation. So, the revised SUD as a single diagnosis will better group the symptoms that patients experience (APA, 2013). SUD occurs when the recurrent use of alcohol and other drugs causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home. According to the DSM-5, a diagnosis of SUD is based on evidence of damaged control, social impairment, risky use, and pharmacological criteria (SAMSHA, 2016).

The SUD population are more highly vulnerable than the general population (addiction involves economic instability, accidents, social exclusion...) and frequently describe life stories marked by sufferings and loss (Cuomo, Sarchiapone, Di Giannantonio, Maninci, & Roy, 2008). Several authors have noted the possible relationship between loss of a significant person, complications in grief, and substance users (Bammer & Weekes, 1994; Denny & Lee, 1984; Martin & Privette; 1989;

Zuckoff et al., 2006) (For more information see Table 1 and Table 2 in the Annex section). For example, Risser, Bönsch and Schneider (1996) stated that 80% of addicted patients have experienced at least one traumatic event during their childhood, such as the loss of a parent or parents' separation. After studying the reasons for relapse in 270 heroin addicts, Krueger (1981) found that users who have experienced stressful life events, such as a recent loss or a diagnosis of MDD, show a great deal of difficulty in adapting to a new lifestyle without drugs. According to the study, almost half of the respondents (48%) used heroin as an adaptive attempt to regulate and control the high anxiety at the same time as a way of managing stressful life events. In consonance with Rugani et al. (2011), the addiction might be affected by traumatic life events but it also impacts their development.

1.3 Associated disorders and comorbidity

The phenomenon of SUD is extremely complex for the reason that it converges in different dimensions (physiological, cultural, anthropological, political...). It is difficult to study one without considering the implications arising from others because as Heim and 94 different researchers stated (Heim et al., 2014) substance dependence cannot be separated from its social, psychological, cultural, political, legal and environmental contexts because it is not simply a consequence of brain malfunction. But considering that SUD is often expressed with a wide range of maladaptive problems and psychopathology, we have focused on personality disorders, clinical syndromes and risk of suicide.

Almost 90% of all suicides are correlated with a diagnosable mental health or SUD (American Foundation for Suicide Prevention, 2011). There have been several studies about the risk of suicide in a general sample (Young et al., 2012; WHO, 2014) and also among SUD populations (Patel et al., 2012; Phillips & Cheng, 2012). Different studies demonstrate that those people with a diagnosis of SUD and who have experienced a loss present more risk of suicide. However, not enough is known about the risk of suicide among those SUD patients who are bereaved. The same occurs related to research based on personality disorders (PD) and clinical syndromes. In the same view, a wealth of evidence demonstrates that an elevated comorbidity exists among people SUD (Gielen, Havermans, Tekelenburg, & Jansen, 2012; Morley, Baillie, Sannibale, Teesson, & Haber, 2013; Urbanoski, Kenaszchuk, Veldhuizen, & Rush, 2015). As Compton, Cotller, Jacobs, Ben-Abdallah, and Spitznagel (2003) stated, those patients with diagnosis of Anxiety, MDD or PTSD and SUD described more severe symptomatology and greater functional impairments, which influence to an

increased vulnerability to relapse after discharge. It is important to note that PDs can seriously influence the course, prognosis and the treatment outcomes of SUDs (Verheul, 2001). Reporting a diagnosis of PD is linked with greater impairments as well as a lower quality of life (Skodol, Oldham, & Gallaher, 1999; Fassino, Daga, Delsedime, Rogna, & Boggio, 2004). In fact, different studies have confirmed a high level of comorbidity between PD and SUD (Casadio et al., 2014; Colpaert, Vanderplasschen, De Maeyer, Broekaert, & De Fruyt, 2012; Jahng et al., 2011; Langas, Malt, & Opjordsmoen, 2012; Salazar-Fraile, Ripoll-Alandes, & Bobes, 2012; Sher & Trull, 2002; Walcott, Martin, & Hicking, 2013).

The three main topics are listed in the introduction but it is relevant to notice there are no studies which describe and address the relationship between CG, SUD, psychopathology and associated variables. In the next section, the research aims are presented based on the scientific literature gaps. The *Main results and discussion* provides an overview of the main findings. Limitations, clinical implications of our findings as well as some suggestions for future research are also provided. In the final section of this dissertation, conclusions are presented.

2. RESEARCH AIMS

2. OVERVIEW OF RESEARCH AIMS

The objectives as well as the main hypothesis of each manuscript are next presented.

Bereavement variables

What is the frequency of CG symptoms in an SUD sample compared to the control group?

To our knowledge, there are no studies to date which have assessed CG symptomatology in substance use disorder populations specifically. For this reason, as shown in *Publication 1*, the first main aim of our project was to determine if the presence of CG is more frequent among drug dependent patients than a control group, examine comparisons between the "normative" and "complicated" grievers with respect to demographic characteristics, variables related to drug dependency, bereavement-related experiences and perceived social support, as well as to identify which of these variables could be associated with the presence of complications in bereavement among participants. The hypothesis was that CG symptomatology is more frequent among the SUD sample than the control group.

How does the ICG behave with people with SUD?

In *Publication 2*, the psychometric properties of the ICG instrument are described, as well as the concurrent construct validity among bereaved drug dependent individuals with coping strategies, social support and clinical syndromes. Considering that there is not any bereavement instrument to date adapted to the characteristics of an SUD sample, it is relevant to analyse how the ICG instrument reacts in a psychiatric subpopulation. The hypothesis is that the ICG instrument could perform differently among the SUD sample than the general population (original sample from the adaptation study).

Is there any relationship between drug users' bereavement and substance consumption?

In *Publication 3*, we determined the relationship between the loss of a significant person and drug consumption among bereaved people diagnosed with substance use disorder in order to address this issue in treatment. The paper aims to shed light on the differences in bereavement, addiction, as well as sociodemographic variables, between persons who first lost a significant one and afterwards increased drug consumption ("B-A"), and those individuals who started using drugs before experiencing the loss of a significant person ("A-B"). In this research, our hypothesis is that those

patients who belong to the "B-A" group report more CG symptoms and those patients from the "A-B" describe an increased drug consumption after the death of a significant family person or close friend.

Psychopathology and symptoms of CG

In order to increase our knowledge related to the variables associated to CG symptomatology, *Publication* 4 and *Publication* 5 are focused on comorbidity. There is a lack of evidence regarding clinical syndromes and CG symptomatology among the SUD population.

What is the association between clinical syndromes and CG symptoms?

For this reason, *Publication 4* aims to assess the association between the presence of clinical syndromes (Anxiety, MDD, PTSD) and CG symptoms among bereaved people with SUD. In this case, the hypothesis is related to those patients with CG symptoms who are presenting more clinical syndromes.

What are the PDs that are most associated with CG symptoms?

In the same line, *Publication 5* reports a study on personality disorders based on the network analysis. The hypothesis is that Narcissistic, Histrionic and Compulsive PDs could be more associated with CG symptomatology.

Risk of suicide and bereavement

What are the variables that allow us to distinguish people with suicide risk in a bereaved SUD sample?

In *Publication 6*, the presence of suicide risk in abstemious drug dependent people who have experienced the loss of a significant person was described. Also, this research described other key variables which may distinguish between those individuals without risk of suicide and those with risk of suicide. Here, the hypothesis is that those patients who indicated a risk of suicide also reported more CG symptoms than those without risk of suicide.

What are the PDs that are related to the suicide risk in a bereaved SUD sample?

In the *last paper*, the aim was to describe which PDs are more frequent among those SUD bereaved patients with a risk of suicide and which PDs are more frequent among those without a risk of

suicide. We hypothesised that Borderline and Depressive PDs would be the two PDs associated with risk of suicide.

3. METHOD

3. METHOD

Each article presented in this PhD has its specific methodology based on set research objectives. Below, the general methodology used in all the research manuscripts was described.

3.1 Design

This study was based on a consecutive non-probabilistic sampling of convenience.

3.2 Participants

The clinical group of this study were patients of a Public Addiction Treatment Centre (Cas Teresa Ferrer, IAS). The main inclusion criteria were that 1) they had a diagnosis of alcohol, cocaine or heroin dependence, carried out by a clinical specialist in the centre according to the Diagnostic and Statistical Manual of Mental Disorders Fourth Revised Edition (DSM-IV-TR), 2) they suffered a bereavement of a significant person (family, best friend or couple) at some time in their life, but at least a year previously to the interview, and 3) being abstinent during the last month was the third inclusion criteria. Related to the exclusion criteria were: 1) Any bereavement within the year previous to the interview would exclude them from this study and 2) active drug consumption.

The number of patients (n=196) was designed from the average prevalence of the CG in the general population (15%), according to different authors (Lobb et al., 2010; Wittouck et al., 2011), and an alpha level of 0.05 for a precision of ± 5 percentage units in a bilateral contrast. Related to this, we interviewed 205 patients. However, 9 cases were rejected for not fulfilling criteria or inability of personality test.

Data collection of the clinical sample took place from September of 2012 to June of 2013 in a clinical office of the Public Addiction Centre, CAS Teresa Ferrer (IAS).

The control group was a convenience sample selected from social clubs and community-related organisations and consisted of 100 participants from Spain. In order to retain the required number of participants, we had to interview 175 patients (75 cases were rejected for not fulfilling the criteria). The inclusion criteria for the control group were 1) they had suffered the loss of a significant person

at some time in their life but at least a year previous to the interview and 2) they did not present any drug dependence problems.

Participants for the control group were recruited from January 2015 to June 2015.

We only used the control group for the article related to the occurrence of CG symptomatology in order to compare the phenomenon of CG symptoms with the general population. The other studies are focused on the bereaved SUD sample.

3.3 Measures

Background variables (sociodemographic, drug consumption and bereavement characteristics) were measured with self-constructed questionnaire. Each participant could choose the language (Catalan or Spanish) to be interviewed through an interview with the author of the current research. Below the specific variables were described.

Several socio-demographic characteristics were registered: age, gender, marital status (single, married or with partner, separated or divorced, widowed), children (yes or not), beliefs (atheist, agnostic or religious), education (primary or college education), work status (working, retired, unemployed, or receiving disability benefit).

Drug use-related variables were assessed: main drug dependence (alcohol, cocaine or heroin), age at onset of, and age of increase in the consumption of the drug (determined by the question of how old the patient was when they first increased consumption of the main drug). The participants were asked if they took prescribed pills. The perceived relationship between the death of a significant person and drug consumption was likewise inquired into. Whether or not they had been in prison at any time was also documented.

Bereavement-related information was collected and included the most significant /closest loss experience, time since death and circumstances of death (natural, traumatic-accident, suicide, homicide or overdose).

Complicated grief was assessed using the Spanish version of the *Inventory of Complicated Grief* (ICG) (Limonero, Lacasta, García, Maté, & Prigerson, 2009). It consists of 19 items. Responses are provided on a 5-point likert scale to present an increase in severity (0-never, 1-seldom, 2-sometimes, 3-often and 4-always) (maximum score: 76). The cut-off point was based on the English

version of the ICG (Prigerson et al., 1995). The higher scores corresponded to an increased likelihood of developing symptoms of CG. We categorised a respondent as having CG symptoms if the total score was higher than 25. The reliability (internal consistency) of the Spanish version was high (Cronbach's alpha= 0.88). The test-retest reliability was measured using 30 individuals after 4 months and it was also high (0.81). The ICG convergent validity was assessed in relation to other scales (Beck Depression Inventory "BDI"; Beck Anxiety Inventory "BAI" and Grief Experience Inventory "IED"). The total score of ICG showed a positive and statistically significant correlation with the BDI ($r = 0.43$; $p < 0.001$), BAI ($r = 0.243$; $p < 0.01$) and nine scales of IED with significant correlations ranging between 0.217 and 0.314

Suicide-related characteristics were considered. We asked if any member of their family had died by suicide and if any member of their family had made a suicide attempt. We also request if the patient had ever tried to commit suicide at any time in their life.

The risk of suicide was measured by the Spanish version of the *Risk of Suicide* (RS) (Plutchick, Van Praga, Conte, & Picard, 1989). The RS could discriminate between individuals and patients with no suicide attempts or a history of them. It consists of 15 items with a dichotomous response (yes / no). The RS includes issues about previous attempts, ideation intensity of current feelings of Depression and hopelessness, and other aspects of the attempts. The total score is obtained by summing all items (maximum score 15). The cut-off proposed by the authors of the Spanish version (Rubio et al, 1986) was 6. Internal consistency of the test is 0.90. The test-retest reliability is 0.89 (after 72 hours). The sensitivity and specificity of 88% to discriminate between subjects with a history of suicide attempts and those who had never attempted suicide. The factorial analysis shows the existence of four main subjacent factors.

For evaluating Social support, we used the Spanish version of *Multidimensional Scale of Perceived Social Support MSPSS* (Zimet, Dahlem, Zimet, & Farley, 1988) (Arechabala & Miranda, 2002). This self-administered test consists of 12 items in which perceived social support is evaluated. The answers were rated on a 7-point likert scale (1: totally disagree-7: totally agree). The different items were grouped into three factors: peer social support (items 6, 7, 9 and12); family social support (items 3, 4, 8 and 11) and couple or significant person social support (items 1, 2, 5 and 10). To validate the scale, a pilot application to 12 older adults was conducted, which showed that it was necessary to make adjustments to the instrument. Then the instrument, adapted to 76 adults over the Metropolitan Region, was applied using SPSS for statistical analysis, which showed that the behaviour of items allowed it to be applied in its original version. The exploratory factor analysis

resulted in a two-factor model, which is supported by the oblique rotation and confirmatory factor analysis (Arechabala & Miranda, 2002). Internal consistency of the test is superior than 0.8 for peer group and family support perception and also it is superior than 0.7 for the support of significant others. The internal consistency of the 12 items is close to 0.85.

Coping strategies was inquired into using the *Coping Strategies Inventory*, CSI (Cano, Rodríguez, & García, 2007). The CSI was a self-administered test with 40 items, which were rated on a 5-point likert scale (0: nothing – 4: totally agree). This inventory presented a hierarchical structure of eight primary strategies (problem solving, cognitive restructuring, social support, emotional expression, avoidance of problems, desiderata thinking, social withdrawal and self) and four secondary (appropriate management focused on the problem, appropriate managing of emotion, focusing on the problem, mismanagement and inadequate management focused on emotion). Eight factors explained 61% of variance with only 40 items (compared to the original 72 items that explained 47% of the original instrument). Internal consistency coefficients were obtained between 0.63 and 0.89. Convergent validity was found using the inter-correlations between scales and correlations with personality dispositions (NEO-FFI) and perceived effectiveness of coping.

For the assessment of psychopathology and personality disorders, we used *Millon Multiaxial Clinical Inventory* (MCMI-III, Millon, Davis, & Millon, 1997; Spanish translation by Cardenal & Sánchez-López, 2007). The MCMI-III consists of 175 items with dichotomous answers (true/false), a self-report questionnaire that measures 11 clinical personality patterns, 3 traits of severe personality pathology, 7 syndromes of moderate severity, 3 severe syndromes and a validity scale and 3 modifying indices. The personality disorder scales cover major diagnostic criteria of DSM-IV. The scores which indicate presence of clinical syndromes are equal or greater than 85. The internal consistency is 0.66 to 0.80 and the test-retest reliability for dimensional ratings is 0.85 to 0.93. The test-retest reliability for the categorical diagnosis is Kappa <0,45. It shows sensitivity 0.44-0.92 (mean=0.60) and its predictive power is 0.30 to 0.81 (mean=0.69). To correlate with the MCMI scores dimensional test review of 90 symptoms (SCL-90-R) and the Inventory Minnesota Multiphasic Personality (MMPI) scores >0,50. It shows sensitivity 0.44-0.92 (mean=0.60) and its predictive power is 0.30 to 0.81 (mean=0.69).

3.4 Procedure

The psychometric tests were administered following the Organic Law 15/1999 regarding the Protection of Personal Data. Informed consent was obtained from all participants and the protocol was approved by the Institutional Ethics and Research Review Board of the Institut Assistència Sanitària (IAS) on 4th of July, 2012. According to them, the study expires with the current regulation of the International conference of Harmonization of the Procedure of Good Clinical Practice (CPMP/ICH/135/95) as well as the International Guidelines for Ethical Review of Epidemiological Studies. Data collection took place from September of 2012 to June of 2013.

Before starting the study, we did a preliminary case study with two patients. The aim of this pretesting study was to discover if the questions were understandable and whether they could follow instructions as well as completing the whole pack of tests.

A meeting with the entire team of therapist from the addiction centre was held to explain the research (objectives and procedure) and requesting their collaboration in the selection of patients. Patients who met the three inclusion criteria were informed by their therapist of reference. When patients had agreed to collaborate with the present research, the psychologist (who is the author of the current PhD) called each patient to arrange a time that was the most appropriate for them.

Regarding the control group, participants were recruited from social clubs and community-related organisations. In this case, the author of the present doctoral dissertation contacted different candidates, explaining the research and the main objectives. The different tests were given to those candidates who agreed to participate in the study after telling them in detail how they had to be filled. The participants were given a phone number to call the author once they had completed the tests. The SUD was assessed with questions and those participants with a problematic pattern of drug consumption were rejected.

All participants (both from the clinical and control group) were informed about the study procedures as well as terms of confidentiality. We did not provide any financial support to compensate patients for their participation in the current research. However, all patients were promised that they would receive a research report in order to explain the main findings of the study.

Related to the clinical group, during the interviews, if any patient reported being emotionally affected, the author of the PhD suggested that they discuss how the interview affected them with

their therapist in their next session. The author of the current PhD sought assurance from each patient that a visit to their therapist had been scheduled.

A thank you letter was sent to the participants of this study from 29st May to 9th June of 2017.

3.5 Statistical analyses

All the statistical analyses were conducted using the statistical package for the social sciences (SPSS), version 21.0 (Chicago, IL). For the network analysis we used python scipy and the R statistics libraries.

We will describe the specific statistical analyses related to each research aim.

Table 2.

Description of statistical analysis of each paper

Publication	Aim	Main statistical tests
Addiction Research & Theory doi: 10.1080/16066359.2017.1285912	Describe the presence of CG among SUD sample and control sample	Student's t-test; chi-square test; Multiple linear regression
Actas Españolas de Psiquiatría	Analyse how the ICG instrument reacts in a SUD sample	DIF; KMO; Item-total Spearman correlation test; Principal Component Analysis
Heroin Addiction & Related Clinical Problems	Determine the relationship between the loss of a significant one and drug consumption among bereaved SUD sample	Student's t-test; chi-square test.
Heroin Addiction & Related Clinical Problems	Assess the association between the presence of clinical syndromes and CG symptoms among bereaved people with SUD	Student's t-test; Chi-square test ; Logistic regression
Manuscript submitted for publication	Report relationship between PDs and CG symptoms among SUD	Pearson and Spearman correlation
Journal of Substance Use doi:10.3109/14659891.2014.998733	Describe the presence of suicide risk in bereaved SUD sample	Student's t-test; Chi-square test; Stepwise multiple linear regression
International Journal of Environmental Research and Public Health doi: 10.1080/16066359.2017.1285912	Define which PDs are more frequent among SUD patients with risk of suicide	Pearson correlation; Student's t-test; Chi-square test; Multiple linear regression

4. PhD ARTICLES

Masferrer, L., Garre-Olmo, J., & Caparrós, B. (2017). Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers. *Addiction Research & Theory Journal*, 25(5), 361-367.

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ORIGINAL ARTICLE

Is complicated grief a risk factor for substance use? A comparison of substance-users and normative grievers

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ABSTRACT

Background: There are no studies to date which have examined complicated grief (CG) symptomatology in substance use disorder (SUD) populations specifically. This study aimed to determine if the presence of symptoms of CG is more frequent among drug dependent patients than a control group and identify which variables could be associated with the symptomatology of CG.

Method: Sociodemographic variables, drug and bereavement related characteristics, CG symptomatology and perceived social support were examined in a sample of 196 bereaved SUD patients (78.1% men). The control group was formed by 100 bereaved non-addicted participants (73% men). A multiple linear regression analysis was conducted to identify which variables were associated with symptoms of CG.

Results: The presence of symptoms of CG among SUD patients was 34.2%, in comparison to 5% in the control group. Respondents with a higher CG symptomatology include: those being widowed ($\beta = 0.165$), those who had lost a sibling ($\beta = 0.253$), those who had experienced a traumatic death ($\beta = 0.158$), those without working status ($\beta = 0.005$). By contrast, being from the control group ($\beta = -0.157$), reporting secondary education ($\beta = -0.201$) and perceived social support ($\beta = -0.146$) were found to be protective factors.

Conclusions: These findings highlight the importance of diagnosing and treating those bereaved individuals with SUD who appear to be particularly vulnerable to develop CG symptomatology.

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KEYWORDS
Complicated grief; substance use disorder; social support

Introduction

It is well known that grief reactions after the loss of a significant person can lead to psychological and functional impairment, such as intense suffering, decrements in physical health, work-related difficulties and emotional distress (Stroebe et al. 2007). It has consistently been shown that a substantial minority of bereaved people can develop complicated grief (CG) (e.g. Prigerson & Jacobs 2001; Stroebe et al. 2006; Boelen & van den Bout 2008). CG has been defined as a deviation from the normal (in cultural and societal terms) grief experience in either time course, intensity, or both, entailing a chronic and more intense emotional experience, which either lacks the usual symptoms or in which the onset of symptoms is delayed (Stroebe et al. 2007). While reflecting norms and values of contemporary western cultures (Rosenblatt 2013), a psychiatric perspective nonetheless provides a useful frame for understanding and comparing grief reactions (Fabrega 1987). In DSM-5, CG is labeled as a 'Persistent Complex Bereavement Disorder', and is integrated in the appendix listing, 'conditions for further study'. At this point in time, more research is needed to provide a better understanding of the phenomenon (APA 2013). CG is associated with various mental and physical problems, such as depression, anxiety, post-traumatic stress disorder, drug use, work and social impairment and reduced quality of life (Prigerson et al. 1996; Silverman et al. 2000; Latham & Prigerson 2004; Boelen & Prigerson 2007; Neria et al. 2007; Simon et al. 2007; Stroebe et al. 2007; Wittouck et al. 2011).

Although, as noted above, it is known that CG typically occurs among substantial minorities of the bereaved, it is difficult to estimate the incidence of CG more precisely. Frequencies vary across studies, which also have differing diagnostic criteria (Stroebe et al. 2007). In addition, they vary according to the specific populations of bereaved people under investigation. Fujisawa et al. (2010) reported prevalence rates of 2.4% for CG and 22.7% for subthreshold CG in the general population. Kersting et al. (2011) found that the prevalence of CG in the representative population-based sample was 3.7%. Newson et al. (2011) reported a rate of 4.8% for CG among the general bereaved population. Other studies have found a prevalence of CG in about 10–20% of the general bereaved population (Prigerson & Jacobs 2001; Shear & Shair 2005; Bonanno 2006; Lobb et al., 2010; Wittouck et al. 2011; Mancini & Bonanno 2012). Among clinical samples, the prevalence rates vary from 18.6% among hospitalized patients with unipolar depression (Kersting et al. 2009), 20% among psychiatric patients (Zisook et al. 1985; Zisook & Lyons 1989–1990) or 34% among psychiatric patients (Prigerson et al. 2002), 24.3%

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among bipolar disorder patients (Simon et al. 2005), and 33.3% among a mixed sample of psychiatric outpatients (Piper et al. 2001).

Turning to our specific subgroup, substance abusers and dependent populations experience a wide range of drug-related problems, some of which can be regarded as antecedent to such abuse or dependence, others as consequences, and still others as both antecedent and consequent. Studies have shown that stressful life events and/or traumatic experiences in childhood can be antecedents (Cuomo et al. 2008) and economic instability or job insecurity potential antecedents or consequences (Sumnall & Brotherhood 2012). In addition, accidents, court proceedings, imprisonment, homelessness (Ojesjo 2000; Olszewski et al. 2012), as well as social exclusion or stigma can be considered as consequences (Becoña & Cortés 2010; Calabria et al. 2010). These circumstances interact with physical health problems, medical complications and high psychiatric comorbidity among the addicted (Alterman et al. 2010; Sánchez-Peña et al. 2012). Such biopsychosocial factors could increase the vulnerability and even worsen the prognosis of the addiction. Moreover, drug dependent people are more vulnerable than other people in general, and often present life stories marked by suffering and loss. In this regard, different studies have reported a link between losing a significant person and drug consumption among substance users (Denny & Lee 1984; Martin & Privette 1989; Zuckoff et al. 2006). Apart from this, people with CG symptoms are more likely to activate the nucleus accumbens when reminded of the deceased, as O'Connor et al. (2008) stated. This type of SUD population may be particularly exposed to symptoms with reward components, such as yearning. Therefore, experiencing CG and having a SUD diagnosis go together and could have a reciprocal influence.

The present study was designed to determine if the presence of CG is more frequent among drug dependent patients than a control group, examine comparisons between 'normal' and 'complicated' grievers with respect to demographic characteristics, variables related to drug dependency, bereavement-related experiences and perceived social support, as well as to identify which of these variables could be associated with the presence of complications in bereavement among participants.

Method

Participants

We used a case control design. We recruited participants ($n = 196$) who were patients at the Public Addiction Treatment Centre in Spain. The inclusion criteria were that 1) they had a diagnosis of substance use disorder (SUD) (alcohol, cocaine or heroin dependence) according to DSM-IV-TR criteria, 2) loss of a significant person (family, best friend or partner) at some time in their life, but at least a year previously to the interview and 3) abstinence during the last month to avoid any toxic effects of drugs. The sample size was calculated based on the estimated prevalence of CG. We assumed a prevalence of 15% in the general population (Lobb et al. 2010; Wittouck et al. 2011) and an α level of 0.05 for a precision of ±5% units in a bilateral contrast. The control group was a convenience sample selected from social clubs and community-related organizations formed by 100 participants from Spain. The inclusion criteria for the control group were they had suffered the loss of a significant person at some time in their life but at least a year previous to the interview and did not present any drug dependence problems.

Procedure

Participants who met the inclusion criteria were informed by their therapist about potential participation in the study. If patients agreed to participate, the psychologist (who is the first author) contacted each patient to arrange an appropriate time for an interview with them. All participants were informed about the study procedure as well as terms of confidentiality.

If any patient reported being emotionally affected during the interviews, the interviewer suggested that they discuss how the interview affected them with their therapist in their next session. The interviewer sought assurances from each patient that a visit to their therapist had been scheduled.

Informed consent was obtained from all participants and the protocol was approved by the Institutional Ethics and Research Review Board of the Public Hospital (IAS). Data collection took place from September, 2012 to June, 2013.

Measures

Several socio-demographic characteristics were registered: age, gender, marital status (single, married or with partner, separated or divorced, widowed), education (primary or college education) and working status (working, retired, unemployed or receiving disability benefit). Bereavement-related information was collected and included the most significant/closest loss experience, time since death and circumstances of death (natural and traumatic-accident, suicide, homicide or overdose). We asked what the most significant loss was in their life and how that person had died.

Drug use-related variables were assessed: main drug dependence (alcohol, cocaine or heroin). Whether or not they had been in prison at any time was also documented.

CG was assessed using the Spanish version of the Inventory of Complicated Grief (ICG) (Limonero et al. 2009). It consists of 19 items. Responses are provided on a 5-point Likert scale, indicating increase in severity (0-never, 1-seldom, 2-sometimes, 3-often and 4-always) (range: 0–76). The cut-off point was based on the English version of the ICG (Prigerson et al., 1995). We categorized a respondent as having CG if the total score was higher than 25. The internal consistency of the Spanish version was high (Cronbach's $\alpha = 0.88$; test–retest reliability = 0.81).

Social support was assessed using the Spanish version of the *Multidimensional Scale of Perceived Social Support (MSPSS)* (Arechabala & Miranda 2002). This self-administered test consists of 12 items in which perceived social

Table 1. Comparison between the clinical and the control group of demographic characteristics of the bereaved sample.

	Clinical sample			Control sample		
	Normal grievers ($n = 129$)	Complicated grievers ($n = 67$)	p	Normal grievers ($n = 95$)	Complicated grievers ($n = 5$)	p
Gender, *n* (%)			0.40[a]			0.16[a]
Male	103 (79.8)	50 (74.6)		68 (71.6)	5 (100)	
Female	26 (20.2)	17 (25.4)		27 (28.4)	0	
Age, M (SD)	45.43 (10.36)	45,85 (9.7)	0.14[b]	49.31 (15.43)	46.20 (12.11)	0.66[b]
Marital status, *n* (%)			0.15[a]			0.98[a]
Single	27 (20.9)	17 (25.4)		34 (35.8)	2 (40)	
Married/partner	49 (38)	24 (35.8)		40 (42.1)	2 (40)	
Separated/divorced	46 (35.7)	17 (25.4)		18 (18.9)	1 (20)	
Widow	7 (5.4)	9 (13.4)		3 (3.2)	0	
Children, *n* (%)			0.68[a]			0.92[a]
Yes	77 (59.7)	42 (62.7)		49 (51.6)	3 (60)	
No	52 (40.3)	25 (37.3)		46 (48.5)	2 (40)	
Education, *n* (%)			0.002[a]			0.63[a]
Primary	29 (23.2)	30 (45.5)		12 (12.6)	1 (20)	
Second./degree	96 (76.8)	36 (54.5)		83 (87.4)	4 (80)	
Working status, *n* (%)			0.02[a]			0.96[a]
Working	50 (38.8)	22 (32.8)		39 (41.1)	2 (40)	
Other[c]	79 (61.4)	45 (67.3)		56 (58.9)	3 (60)	

[a]Chi-square test.
[b]*t*-test test.
[c]Retired, unemployed, inactive and disability aid.

support is evaluated. The answers were rated on a 7-point Likert scale (1: totally disagree-7: totally agree). Internal consistency (Cronbach's α) of the test is above 0.8 for peer group and family support perception and above 0.7 for the support of significant others. The internal consistency of the 12 items is close to 0.85.

Statistical analyses

The occurrence of CG was measured with the relative frequency of participants scoring higher than 25 on the ICG, and 95% confidence intervals were calculated. In order to compare normal grievers and complicated grievers, we used chi-square tests to identify the relationship between the categorical variables and *t*-tests to determine the relationship between the quantitative and the qualitative variables. In order to identify the variables related to the presence of CG, we conducted a multiple linear regression model. The reference categories for the dummy variables were: 'married' (for the 'marital status' variable) and 'parent' (for the 'relation with the deceased'). Data processing and analysis were performed using the SPSS statistical programme version 21.0 for Windows (IBM Corp., Armonk, NY).

Results

Presence of CG and differences between the clinical and the control sample

Sociodemographic characteristics

The overall sample included 296 participants. The mean age was 46.78 years (SD = 12.19) and 76.4% were male. In the clinical sample, 78.1% of patients were men. The mean age was 45.59 years (SD = 10.14). Related to the control sample, 73% were men and the mean age was 49.15 years (SD = 15.24). In the SUD sample, normal grievers had significantly higher levels of education than complicated grievers, and those who were not working were more frequently classified as CG cases. We did not observe any difference in sociodemographic characteristics between CG and normal grievers in the control group (Table 1).

Importantly, the results showed that the occurrence of CG across the whole sample was 34.2% (CI 95% 1.19–1.29). This frequency was much higher than the control group, which was 5% (CI 95% 1.19–1.29).

Bereavement variables

Table 2 provides information about the relationship to the deceased person, circumstances of his/her death and duration of bereavement. More than a third of the participants with SUD (34.2%) reported loss of the father, 18.9% the mother and 18.4% the sibling. In contrast, 21.7% of the control group reported loss of the father, and 21.7% loss of the grandparent. Among the normal grievers with SUD, the father was the most frequently-experienced type of loss, while among complicated grievers this was a sibling (35.8%). Circumstances of death were found to differ between complicated grievers and normal grievers with SUD. Complicated grievers reported more frequent traumatic circumstances (40.3%) than those with normal grief (20.3%). With regard to the mean time since the death of the significant person, there were statistically significant differences according to the type of griever ($F = 1.98$; $df = 194$; $p = 0.017$). Complicated grievers reported less time since death (9.36 years; SD = 9.78) than normal grievers (13.33 years; SD = 11.48).

Drug characteristics and related variables among the clinical group

More than half of the participants had a diagnosis of alcohol dependence (68.9%), while 18.4% had heroin dependence and 12.8% cocaine dependence. There were no statistical differences according to the main drug diagnosis.

Table 2. Bereavement characteristics of the clinical patients and the participants of the control group.

	Clinical sample			Control sample		
	Normal grievers ($n = 129$)	Complicated grievers ($n = 67$)	p	Normal grievers ($n = 95$)	Complicated grievers ($n = 5$)	p
Relationship to deceased, *n* (%)			<0.001			0.29
Father	52 (40.3)	15 (22.4)		24 (25.3)	2 (40)	
Mother	30 (23.3)	7 (10.4)		24 (25.3)	1 (20)	
Sibling	12 (9.3)	24 (35.8)		4 (4.2)	0	
Grandparent	9 (7)	2 (3)		26 (27.4)	0	
Spouse	9 (7)	10 (14.9)		2 (2.1)	1 (20)	
Friend	10 (7.8)	4 (6)		2 (2.1)	0	
Other	7 (5.4)	5 (7.5)		13 (8.7)	1 (20)	
Circumstances, *n* (%)			0.004			0.63
Natural	102 (79.7)	40 (59.7)		83 (87.4)	4 (80)	
Accident	19 (14.8)	13 (19.4)		3 (3.2)	1 (20)	
Suicide	1 (0.8)	7 (10.4)		2 (2.1)	0	
Homicide	0 (0)	2 (3)		0	0	
Overdose	5 (3.9)	4 (6)		0	0	
Other	1 (0.8)	1 (1.5)		7 (7.4)	0	
Time since loss, M (SD)	13.33 (11.48)	9.36 (9.78)	0.02	12.71 (12.49)	19.80 (11.26)	0.22

Table 3. Drug consumption characteristics of the clinical sample.

	All participants	Normal grievers ($n = 129$)	Complicated grievers ($n = 67$)	p
Main diagnosis, *n* (%)				0.085
Alcohol dep.	135 (68.9)	94 (72.9)	41 (61.2)	
Cocaine dep.	25 (12.8)	17 (13.2)	8 (11.9)	
Heroin dep.	36 (18.4)	18 (14)	18 (26.9)	
Prescribed pills, *n* (%)				0.014
Yes	146 (74.5)	89 (69)	57 (85.1)	
No	50 (25.5)	40 (31)	10 (14.9)	
Prison, *n* (%)				0.006
Yes	40 (20.4)	19 (14.7)	21 (31.3)	
No	156 (79.6)	110 (85.3)	46 (68.7)	

The relationship between having spent time in prison and CG symptoms was found to be statistically significant ($p = 0.006$). Those who had been in prison more frequently were more likely to have CG symptomatology. Being on prescribed medication was significantly higher among the complicated grievers ($p = 0.014$) than the normal subgroup (Table 3).

Social support

About 25.5% of the SUD individuals reported low perceived support, 43.4% moderate and 31.1% high social support. Regarding the control sample, more than a half of the respondents (65%) reported high social support, 33% moderate and only 2% low support (Table 4).

Associated variables of CG symptomatology

As noted at the outset, one main aim of the study was to explore potential variables associated with CG symptomatology. Table 5 shows the results of a multiple linear regression in which scores of CG were the dependent variable. Type of group (SUD and control), sociodemographic factors (age, gender, marital status, level of education and working status), death-related variables (relationship with the deceased, circumstances of death) and social support were used as independent variables. Results showed that reporting a SUD diagnosis increased the risk of CG symptoms. Being a widow was the marital status most closely associated with CG symptoms. Regarding death-related characteristics, those individuals who had lost their sibling have more risk of developing symptoms of CG. Individuals who had lost the significant person in a non-natural way (accident, suicide, homicide or overdose) were also more likely to have CG symptoms. On the contrary, secondary educational level appeared to protect against developing CG symptoms. Furthermore, participants who perceived high social support were significantly less likely to have symptoms of CG. The inclusion of an interaction term of the social class and the sample type (cases and controls) did not reach statistical significance.

Discussion

The main objective of the current study was to determine the occurrence of CG among SUD individuals and compare it with the control group. At the same time, the study aimed at examining demographic characteristics, variables related to drug addiction and perceived social support and compare those characteristics between normal grievers and complicated grievers. Finally, we studied which of these variables could be associated with the potential symptoms of CG among participants. Our results showed that, according to the cut-off of the ICG (Prigerson et al. 1995), CG symptomatology occurrence among SUD patients was 34.2%, whereas it was only 5% among the control group. The presence of CG symptomatology in this study was higher than that found in previous studies in non-SUD populations. Our data shows the high vulnerability of having CG symptoms among subjects with an SUD diagnosis, which underlines the elevated comorbidity between psychiatric disorder and SUD (Kelly et al. 2012; Pettiani et al. 2013; Barral et al. 2016).

Furthermore, statistically significant differences were found between normal and complicated grievers, with regard to education, working status, the significant person who died and circumstances of death and time since loss. Complicated

Table 4. Perceived social support of the clinical group and the control group.

	Clinical sample			Control sample		
	Normal grievers ($n = 129$)	Complicated grievers ($n = 67$)	p	Normal grievers ($n = 95$)	Complicated grievers ($n = 5$)	p
Perceived social support, *n* (%)			0.056			0.07
Low	28 (21.7)	22 (32.8)		2 (2.1)	0	
Moderate	54 (41.9)	31 (46.3)		29 (30.5)	4 (80)	
High	47 (36.4)	14 (20.9)		64 (67.4)	1 (20)	
Perceived social support, X (SD)	60.42 (17.03)	55.12 (15.64)	0.03	71.16 (10.41)	63 (12.10)	0.09

Table 5. Multiple linear regression analysis of variables associated to the presence of CG symptomatology.

	Unstandardized coefficients		Standardized coefficients			95% Confidence interval for B	
	B	Standard error	*β*	*t*	Sig.	Down limit	Upper limit
Sample type	−5.129	1.987	−0.157	−2.581	0.01	−9.042	−1.217
Age	−0.057	0.081	−0.045	−0.702	0.483	−0.217	0.103
Gender	0.809	1.855	0.022	0.436	0.663	−2.843	4.461
Marital status							
Single	4.101	2.128	0.118	1.927	0.055	−0.088	8.289
Separated	1.922	1.947	0.056	0.987	0.324	−1.91	5.755
Widow	10.591	5.177	0.165	2.046	0.042	0.4	20.782
Who							
Sibling	11.505	2.6	0.253	4.426	0.000	6.387	16.622
Grandparent	−4.003	2.753	−0.086	−1.454	0.147	−9.422	1.416
Friend	2.804	3.868	0.041	0.725	0.469	−4.812	10.419
Spouse	4.428	4.892	0.072	0.905	0.366	−5.202	14.058
Other	4.896	2.82	0.09	1.736	0.084	−0.656	10.447
MSPSS[a]	−0.14	0.051	−0.146	−2.732	0.007	−0.242	−0.039
Traumatic circumstances[b]	5.875	2.204	0.158	2.666	0.008	1.537	10.213
Secondary studies	−7.209	1.833	−0.201	−3.932	0.000	−10.818	−3.6
No working status[c]	0.165	1.672	0.005	0.099	0.921	−3.127	3.457

[a]MSPPS: total scores of the Multidimensional Scale of Perceived Social Support.
[b]Traumatic circumstances: Accident, suicide, homicide and overdose.
[c]No working status: retired, unemployed, inactive and disability aid.

grievers more frequently reported lower level of education, no working status, traumatic circumstances of death, and less time since the loss of the significant person.

Following the range of risk factors identified by bereavement research, the relationship with the deceased was a relevant factor. Our results indicate that individuals who had lost their sibling have an increased risk of CG. This result contrasts with those of both Fujisawa et al. (2010) and Kersting et al. (2011), who found in the non-SUD population that the loss of a spouse or the loss of a child were the factors which cause the highest risk of CG. Furthermore, Prigerson et al. (2002) demonstrated that a sibling had the lowest risk of CG among all of the first-degree relatives. According to our results, it is important to note that the death of a sibling represents a risk factor in developing symptoms of CG, because the sibling may be the figure who can establish a closer bond with SUD individuals, compared to other relatives.

In relation to circumstances of death, unexpected losses are usually more emotionally intense (Jones et al. 2003). For this reason, traumatic death was linked to a higher risk of CG symptomatology, which was similar to results found in other studies (Piper et al. 2001; Barry et al. 2002; Macias et al. 2004; Kristensen et al. 2012; Nakajima et al. 2012). This was associated with the concept that the unique characteristics of traumatic death account for much of the variance in bereavement outcome in comparison to natural causes of death (Lobb et al. 2010).

Several sociodemographic factors were assessed related to CG. Age and gender were both found not to be significantly different. A lower level of education was related to CG symptomatology, which was in line with the findings of Onrust et al. (2006) and Newson et al. (2011). As Maccallum and Bryant (2010) pointed out, lower levels of cognitive functioning were found among people with CG symptoms, which were attributed to CG interfering with information processing.

In the present research, there were no differences between the main diagnosis of drug dependence and complications of grief. Related to having spent time in prison, as other authors suggested (Leach et al. 2008; Wilson 2011), there were statistically significant differences between normal and complicated grievers, depending on whether they had ever spent time in prison. Although there is no clear hypothesis about the relationship between symptoms of CG and spending time in prison, this could be due to the accumulation of traumatic life situations. Apart from this, taking prescribed pills was statistically significant to symptomatology of CG, which underlines the vulnerability of personality related to addicted participants.

According to research on social support (Bonanno et al. 2002; Ott 2003; Macias et al. 2004; Vanderwerker & Prigerson 2004; Stroebe et al. 2005; Burke et al. 2010; van der Houwen et al. 2010), complicated grievers' scores on social support were much lower than normal grievers. In this way, social support plays an important role in

adjustment to bereavement. Despite the fact that our results are not in the same line as other studies (Anusic & Lucas 2014), it is important to note how perceived social support could be significant among substance users.

Our last objective was to describe which variables could be associated with the potential symptoms of CG among drug dependent participants. We concluded that CG symptomatology was most closely associated with the type of sample (presence of SUD), education (primary), significant person who died (sibling), circumstances of death (traumatic circumstances), and social support perceived (low and moderate).

Limitations

The current study has some limitations. For example, one of the limitations was the subjective measurement and cross-sectional design of the research. Related to the level of education, the control group reported having more frequency of secondary level education and higher. As indicated, the authors acknowledge that 'complicated grief symptomatology' reflects western psychiatric understandings. However, as the first study to focus on bereavement among drug dependent people, this perspective has enabled us to identify some important variables for further investigating this population.

Conclusions

In conclusion, our substance dependent patients based study found that the occurrence of CG symptomatology was 34.2%. Although other studies on the prevalence of CG among psychiatric patients already exist (Zisook et al. 1985; Piper et al. 2001; Prigerson et al. 2002; Jones et al. 2003; Macias et al. 2004; Simon et al. 2007), to our knowledge, this is the first research to report the occurrence of CG among drug dependent people. CG seems to be a more frequently-experienced phenomenon among addicted people than among the non-SUD population. The identification of social support as a protective factor was relevant. Demonstrating the prevalence and correlation of this disorder among such a vulnerable subgroup of bereaved people can help in the process of identification of those who need effective intervention (Newson et al. 2011). This study could contribute to the further understanding of different variables related to bereavement outcomes. As Templeton and her collaborators (Templeton et al. 2016, 2017) suggested, it is important to consider the lack of support for bereavement in recovery programmes. For this reason and bearing in mind other studies such as Zuckoff et al. (2006), in which the complications in bereavement were treated, the present research places special emphasis on the importance of diagnosing and treating bereaved SUD patients who seem particularly vulnerable to developing CG symptomatology.

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Disclosure statement

All authors declare that they have no conflicts of interest.

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Factor structure and concurrent construct validity of ICG among bereaved substance users

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Background. It is important to understand the repercussions of Complicated Grief (CG) symptoms in addictions. There are no studies to date which have examined the psychometric properties of any test of bereavement among people with substance use disorder (SUD). Participants with SUD can have a different experience of bereavement from other people and therefore could respond differently to the usual instruments which assess CG symptomatology.

Method. This study aims to establish the psychometric properties of the Spanish adaption of the Inventory of Complicated Grief (ICG) in a sample of 196 bereaved drug dependent patients.

Results. Results indicate that the internal consistency of the Spanish ICG was high (Cronbach's alpha=0.922). The Spanish IDC shows good psychometric properties and it is a useful tool to discriminate adaptive reactions to symptomatology of complicated grief. Four factors were identified: discomfort, non-acceptance, loneliness-isolation and presence of deceased. Those factors showed a good internal reliability (minimum Cronbach's alpha=0.78).

Conclusions. The results of the current study confirm the multidimensionality of CG's symptomatology construct.

Keywords: Substance use disorder, Complicated grief, Reliability, Validity

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Estructura factorial y validez de constructo concurrente del IDC entre usuarios de drogas en duelo

Introducción. Es importante entender las repercusiones del duelo complicado (DC) en el ámbito de las adicciones. Hasta la fecha no hay estudios que hayan examinado las propiedades psicométricas de ningún instrumento de evaluación del duelo en las personas con trastorno por uso de sustancias (TUS). Los participantes con TUS pueden tener una experiencia del duelo diferente a la de otras personas sin patología psiquiátrica y, por tanto, podrían responder de manera diferente a los instrumentos habituales que evalúan sintomatología del duelo complicado.

Metodología. Este estudio tiene como objetivo establecer las propiedades psicométricas de la adaptación española del Inventario de Duelo Complicado (IDC) en una muestra de 196 pacientes dependientes de drogas en duelo.

Resultados. Los resultados indican que la consistencia interna del ICG español fue alta (alfa de Cronbach=0,922). La adaptación española del ICG en la muestra con pacientes con TUS muestra buenas propiedades psicométricas y es una herramienta útil para discriminar reacciones de adaptación a la sintomatología de duelo complicado. Se identificaron cuatro factores: el malestar, la no aceptación, la soledad-aislamiento y la presencia del difunto. Esos factores mostraron una buena fiabilidad interna (alfa de Cronbach mínimo de 0,78).

Conclusiones. Los resultados de este estudio confirman la multidimensionalidad del constructo sintomatología del duelo complicado.

Palabras calve: Trastorno por uso de sustancias, Duelo complicado, Fiabilidad, Validez

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INTRODUCTION

Bereavement is a universal experience to which the majority of individuals adjust adequately[1]. A minority of bereaved people develop symptoms of Complicated Grief (CG)[2,3]. CG has been defined as a clinically-significant deviation from the cultural norm (i.e., that which could be expected to pertain, according to the extremity of the particular bereavement event) in either (a) the time course or intensity of specific or general symptoms of grief and/ or (b) the level of impairment in social, occupational, or other important areas of functioning[4]. In DSM-5, CG is labelled "Persistent Complex Bereavement Disorder", and is integrated in the appendix listing "conditions for further study". At this point in time, more research is needed to better understand of the phenomenon[5]. For this reason, the use of validated measures to assess symptoms of CG in clinical samples would be especially relevant to distinguish it from other disorders such as depressive disorders or PTSD[6].

One of the main instruments validated in Spanish to assess symptoms of CG is the Inventory of Complicated Grief (ICG)[7]. The ICG is a 19-item questionnaire which shows high internal consistency with Cronbach's alpha of 0.94 and test-retest reliability of 0.80 after six months[7]. This test was designed to focus on symptoms that are characteristic for a diagnosis of CG symptomatology and associated with adverse health and mental health outcomes[8]. A score higher than 25 is an indicator of symptoms of CG. The ICG assesses symptoms of CG such as intense yearning and preoccupation with the deceased, anger and bitterness about the death, shock and disbelief, estrangement from others, hallucinations of the deceased, behavioural change, including avoidance or proximity seeking behaviour[9]. Along the same lines, an Italian study[6] revealed a high level of internal consistency, with Cronbach's alpha of 0.947, and factor analyses noted a single-factor solution, as did Prigerson's original ICG test. The Spanish validation of ICG was conducted by Limonero et al.[10] This study proved three constructs related to CG ("memories of the deceased", "feeling of emptiness" and "presence-absence of the deceased") which highlighted the multidimensionality of the concept. This validation reported high psychometric properties such as Cronbach's alpha of 0.88 and test-retest reliability of 0.81.[10]

CG has been assessed in general population samples, but we are unaware of any studies that have examined the CG symptomatology performance among SUD samples specifically. It is important to study CG symptomatology among SUD samples, because their experience of grief may differ from non-SUD samples. Specifically, SUD samples may be particularly vulnerable to symptoms associated with the brain's reward system. For example, recent fMRI research indicates that persons with complicated grief are more likely to activate the nucleus accumbens when reminded of the deceased[11]. These findings suggest that persons with SUD may be particularly vulnerable to symptoms with reward components, such as yearning.

The current study was based on bereaved drug users. The occurrence of CG among bereaved drug dependent individuals in treatment was 34.2%[12], which underlines that CG has a high presence among the SUD population than general population. In the field of substance use disorders, it is clinically relevant to study effects on an emotional level and how to deal with one of the most traumatic situations such as the loss of a significant person to improve specific and more accurate treatment. In this regard, having knowledge related to the specific characteristics of the instrument among drug bereaved individuals strengthens the understanding of the complexity of the symptomatology of CG.

Most broadly, persons with diagnosable mental disorders are often assumed to classify in a simple category (mental disorder) regardless of their co-morbid diagnoses, what implies a minimization of the differences between different groups of psychiatric patients. Furthermore, sometimes the study of an instrument in clinical populations confirms the psychometric strengths previously described in the general population or in patients with other mental disorder[13]. However, many studies have found that clinical instruments perform diversely in different populations. For example, the Beck Depression Scale failed to demonstrate the same psychometric properties when employed in a sample of substance users[14]. Thys, any instrument should be validated across specific subpopulation because researchers have to be aware about potential differences in the responses and perceptions in different groups of patients[13].

Considering that the prevalence of CG among SUD population is more than double that of the general population and following previous studies that have examined the implementation of psychiatric diagnoses in the SUD population[15] we wanted to examine the psychometric properties of the ICG among a substance user population, a group that is particularly likely to experience co-morbid psychiatric disorders, high psychosocial impairment, increased risk of violence, lower health and functional status, and poorer treatment outcomes.

The present study aims to a) analyse the factor structure of the ICG and b) examine the concurrent construct validity among bereaved drug dependent individuals with coping strategies, social support and clinical syndromes.

METHOD

Participants

The sample was based on a consecutive non-probabilistic convenience sample of 196 patients with SUD who attended

the Public Addiction Treatment Centre in Girona (Catalonia, Spain). The inclusion criteria were that 1) they had a diagnosis of alcohol, cocaine or heroin dependence carried out by clinical specialists in the centre according to DSM-IV-TR criteria, 2) they suffered a loss of a significant person (family, best friend or partner) at some time in their life, but at least a year previous to the interview, and 3) abstinence during the last month, to avoid the presence of any toxic effects of drugs.

Measures

Several socio-demographic characteristics were assessed: age, gender, marital status (single, married or with partner, separated or divorced, or widowed), education (primary, which includes education up to eight years of age, and secondary, which includes education after eight years of age, the latter also including higher education) and work status (working, retired, unemployed, or being on disability benefit).

Bereavement-related variables. We assessed what the most significant loss in their life was and how that person had died (natural or caused by illness and/or traumatic) and the time since the death.

Drug use-related variables. The diagnosis of main drug dependence (alcohol, cocaine or heroin) was established by the clinician assigned to each participant according to DSM-IV-TR criteria. We asked participants at what age they increased the consumption of their main drug as well as the method of drug administration. We assessed whether participants received psychopharmacological treatment.

CG symptomatology was assessed using the Spanish version of the Inventory of Complicated Grief (ICG)[10]. It consists of 19 items. Responses are provided on a 5-point likert scale to present an increase in severity (0-never, 1-seldom, 2-sometimes, 3-often and 4-always) (maximum score: 76). The highest scores corresponding to an increased likelihood of developing symptoms of CG[10]. The cut-off point was based on the English version of the ICG[7]. We categorised a respondent as having CG symptoms if the total score was higher than 25. The reliability (internal consistency) of the Spanish version was high (Cronbach's alpha=0.88). The test-retest reliability was measured using 30 individuals after 4 months and it was also high (0.81). The ICG convergent validity was assessed in relation to other scales (BDI; BAI and IED). The total score of ICG showed a positive and statistically significant correlation with the BDI ($r=0.43$; $p<0.001$), BAI ($r=0.243$; $p<0.01$) and nine scales of IED with significant correlations ranging between 0.217 and 0.314[10].

Social support was assessed using the Spanish version of the Multidimensional Scale of Perceived Social Support MSPSS[16]. This self-administered test consists of 12 items in which perceived social support is evaluated. The answers were rated on a 7-point likert scale (1: totally disagree - 7: totally agree). To validate the scale a pilot application to 12 older adults was conducted, which showed that it was necessary to make adjustments to the instrument. Then the instrument adapted to 76 adults over the Metropolitan Region was applied using SPSS for statistical analysis, which showed that the behaviour of items allowed it to be applied in its original version. The exploratory factor analysis resulted in a two-factor model, which is supported by the oblique rotation and confirmatory factor analysis[16]. Internal consistency (Cronbach's alpha) of the test is above 0.8 for peer group and family support perception and above 0.7 for the support of significant others. The internal consistency of the 12 items is close to 0.85.

For evaluating the coping strategies, we used the Spanish version of Coping Strategies Inventory, CSI [17]. The CSI is a self-administered test with 40 items which were rated on a 5-point likert scale (0: nothing - 4: totally agree). This questionnaire presented a hierarchical structure of eight strategies (problem solving, cognitive restructuring, social support, emotional expression, avoidance of problems, desiderata thinking, social withdrawal and self-criticism). Eight factors explained 61% of variance with only 40 items (compared to the original 72 items that explained 47% of the original instrument). Internal consistency coefficients were obtained between 0.63 and 0.89. Convergent validity it was found using the inter-correlations between scales and correlations with personality dispositions (NEO-FFI) and perceived effectiveness of coping[17].

For the assessment of clinical syndromes we used Millon Multiaxial Clinical Inventory[18,19]. The MCMI-III is a self-report questionnaire of 175 items with dichotomous answers (true/false), which measures 11 clinical personality patterns, 3 traits of severe personality pathology, 7 syndromes of moderate severity, 3 severe syndromes and a validity scale and 3 modifying indices. The clinical syndrome scales cover major diagnostic criteria of DSM-IV. The scores which indicate presence of clinical syndromes are equal or greater than 85. The internal consistency is 0.66 to 0.80 and the test-retest reliability for dimensional ratings of 0.85 to 0.93. The test-retest reliability for the categorical diagnosis is Kappa <0.45. It shows sensitivity 0.44-0.92 (mean=0.60) and its predictive power is 0.30 to 0.81 (mean=0.69).

Procedure

Participants who met the three inclusion criteria were informed by their therapist about potential participation in the study. If patients agreed to collaborate, the psychologist (who is the first author) called each patient to arrange an appropriate time for an interview with them. All participants were informed about the study procedure as well as terms of

confidentiality. Informed consent was obtained from all participants and the protocol was approved by the Institutional Ethics and Research Review Board of the Institut Assistència Sanitària (IAS). Data collection took place from September 2012 to June 2013.

Statistical analyses

A descriptive analysis of the study variables was carried out by means of absolute and relative frequencies for qualitative variables and by means of central tendency and dispersion measures for quantitative variables.

The presence of CG was defined as a score higher than 25 points in the ICG, which was computed as the relative frequency and 95% confidence intervals were calculated. We performed a descriptive analysis of the ICG item characteristics by means of the mean and the variance. The discriminant index was computed as the item-total Spearman correlation coefficient. In order to assess the differential item functioning (DIF) we used ordinal logistic regression models according to the procedure proposed by Zumbo[20]. The statistical test or DIF consisted of a chi-squared test with 2 degrees of freedom of the difference between the chi-square test value for the ordinal logistic regression with each item ICG score and the chi-square test value for the model with the CG group and an interaction term[20]. The effect size was computed as the R-squared difference values between the two ordinal logistic regression models. The ICG characteristic curve and the test information function were performed. The dimensionality of the 19 items of the ICG scale was evaluated using a Principal Component Analysis (PCA). Eigenvalues higher than 1 and the Cattell's scree plot (the eigenvalues were plotted on descending values and the graph was examined to identify the last substantial drop in the magnitude of the eigenvalues) were used to verify factor solution accuracy[21]. Items were included in a factor if their factor loading was ≥0.4. Cattell's scree plot, absorption of variance and face validity of potential dimensions were used as criteria for multidimensionality. We applied the Promax oblique rotation method to relax the assumption that factors should be uncorrelated with each other. The internal consistency reliability of the scale was evaluated using alpha coefficients for ordinal data[22]. The concurrent construct criterion validity of the ICG factors was tested with canonical correlation analyses including the Coping Strategies scores, social support by MSPSS and clinical syndromes by MCMI-III. Statistical tests were considered to be significant with a 2 tailed p value <0.05. Data processing and analysis were performed using the SPSS statistical program version 21.0 for Windows and Ministep.

RESULTS

Descriptive statistics

78.1% of participants were men and most of them (94.9%) were from Spain. The mean age was 45.59 years old (SD=10.14). With regard to marital status, 37.2% were married or with partner and 32.1% of the participants were separated or divorced. Regarding addiction variables, 68.9% presented alcohol dependence as a main diagnosis, 18.4% heroin dependence and 12.8% cocaine dependence. Regarding bereavement characteristics, 53.05% lost a parent, 18.37% a sibling, 9.69% a spouse, 7.14% a friend and 5.61% a grandparent. 27.19% of the general sample reported traumatic circumstances of loss (accident, homicide, suicide or overdose). Related to the time since the loss of the significant person, 11.97 years was the media (SD=11.07). The mean scores of ICG of those participants with CG symptoms were 41.67 (SD=10.85) and the mean of those patients without symptomatology were 11.37 (SD=7.02), and the differences between the two groups were statistically significant (F=23.14; p<0.001). The mean score, the variance, the discriminant index and the DIF of each ICG item are shown in table 1. Overall, the discriminant capacity of the ICG items was high, excepting for items number 12, 15 and 16, with item-total coefficient correlation values under 0.5. Only items number 4, 6 7, 8 and 10 showed significant DIF values, however the corresponding effect sizes were low.

Reliability and internal consistency

The internal consistency of ICG was adequate on the total scale (alpha for ordinal data=0.931). The Cronbach Alpha from the original test was 0.94 and the Spanish adaptation was 0.8.

The confirmation of the sampling adequacy was performed using the index of Kaiser-Meyer-Oklin (KMO=0.910) and Barlett's Test of Sphericity was statistically significant (p<0.001). The factor analysis shows four factors related to the CG construct. The eigenvalues of each factor were high. The first factor (F1), labelled "discomfort", explains 42.34% of the variance and is comprised of items: 2, 4, 6, 7, 8, 12, 13 and 18; the second factor (F2), called "non-acceptance", explains 7.28% of the variance and includes items: 1, 3, 5, 14, 17 and 19; the third factor (F3), defined as "loneliness, isolation," explains 6.34% of the variance and covers items: 9, 10 and 11; the last factor, "presence of the deceased", (F4) explains 5.54% of the variance and is comprised of items 15 and 16 (Table 2). The figures 1 and 2 show the ICG characteristic curve and the test information function (random sample of 75 participants).

Table 1	Items characteristics of the ICG			
Item	Mean	Variance	DI*	DIF†
1	1.38	1.69	0.664	0.006 (0.324)
2	1.16	1.74	0.674	0.006 (0.306)
3	1.22	2.43	0.732	0.004 (0.403)
4	2.74	1.74	0.749	0.023 (0.009)
5	1.78	2.25	0.568	0.017 (0.081)
6	1.51	2.55	0.690	0.023 (0.016)
7	1.44	2.75	0.771	0.019 (0.013)
8	1.32	2.14	0.759	0.017 (0.022)
9	0.73	1.72	0.535	0.000 (0.962)
10	0.75	1.61	0.574	0.029 (0.012)
11	1.14	2.24	0.672	0.009 (0.192)
12	0.41	0.89	0.260	0.007 (0.450)
13	0.69	1.72	0.598	0.004 (0.557)
14	1.32	2.17	0.748	0.000 (0.903)
15	0.35	0.76	0.428	0.009 (0.305)
16	0.24	0.53	0.358	0.014 (0.191)
17	0.79	1.74	0.592	0.013 (0.132)
18	1.87	2.43	0.758	0.013 (0.057)
19	0.84	2.09	0.465	0.013 (0.188)

* Discriminant Index (item-total Spearman Correlation coefficient)
† Differential Item Functioning (difference R-squared and p value for the Chi-square values between model with item total score vs. model with item, group and interaction)

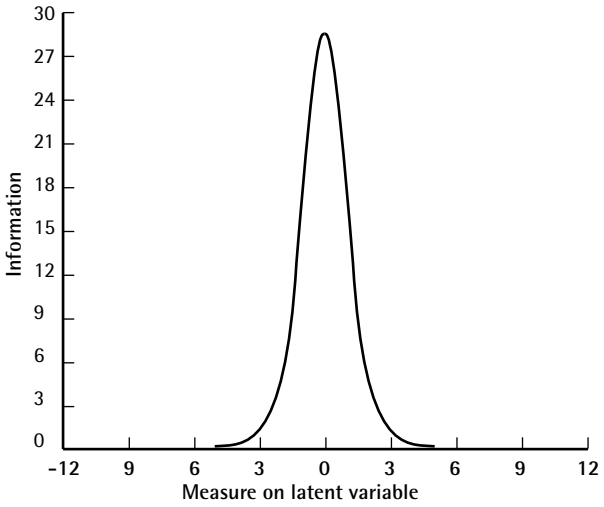

Figure 1 | *ICG Information function*

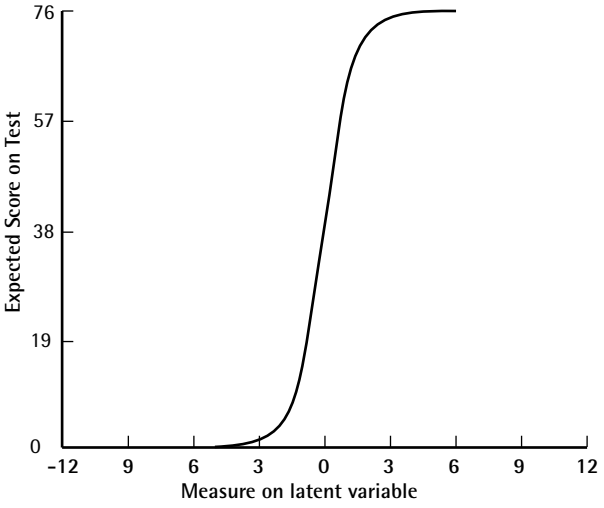

Figure 2 | *ICG Characteristic curve*

Concurrent construct validity

The canonical correlation analysis for the coping strategies and social support showed a full model statistically significant (Wilk's lambda [λ] of 0.712; F[32; 680.15]=2.048, p<0.001), and the squared canonical structure coefficient was 0.288. Function 2 to 4 explained less than 15% in their variance. Social support, the expression of emotions and problem solving capacities were the predictors with large standardized canonical function coefficient with inverse associations between factors 1 and 2 and factors 3 and 4 (Table 3). The canonical correlation analysis for the clinical syndromes showed a full model statistically significant (Wilk's λ of 0.554; F[28;668.45]=4.251; p< 0.001), and the squared canonical structure coefficient was 0.446. Again, functions 2 to 4 explained less than 15% in their respective variable. Post-traumatic stress disorder and major depression were the variables with higher standardized canonical function coefficients and mainly related to factors 1 and 3 (Table 4).

DISCUSSION AND CONCLUSIONS

The present study aimed to analyse the dimensional factor structure of Inventory of Complicated Grief (ICG) and

Table 2 Factorial Structure of the Spanish CG Inventory and ordinal alpha values

Item	Factor 1 Discomfort	Factor 2 Non-acceptance	Factor 3 Loneliness	Factor 4 Presence deceased
6	**0.804**	0.578	0.560	0.321
2	**0.782**	0.582	0.594	0.339
18	**0.777**	0.532	0.463	0.278
7	**0.776**	0.625	0.466	0.170
4	**0.770**	0.418	0.453	0.225
8	**0.696**	0.626	0.340	0.156
13	**0.685**	0.324	0.647	0.479
12	**0.406**	0.158	0.189	0.216
19	0.653	**0.762**	0.670	0.294
5	0.699	**0.726**	0.556	0.351
17	0.547	**0.711**	0.444	0.240
14	0.280	**0.692**	0.321	0.188
3	0.450	**0.686**	0.240	0.303
1	0.588	**0.653**	0.519	0.168
9	0.447	0.353	**0.859**	0.270
10	0.483	0.423	**0.818**	0.145
11	0.567	0.608	**0.791**	0.260
16	0.318	0.271	0.238	**0.899**
15	0.409	0.388	0.356	**0.892**
Ordinal Alpha	0.899	0.887	0.861	0.889

examine the concurrent and discriminating construct validity of each factor among bereaved drug dependent users.

The Spanish ICG is a useful tool which allows for an efficient evaluation of CG symptoms[10]. This is the first step to differentiate between a functional reaction to the grief process and a dysfunctional reaction, and after that offer psychological assessment for those who are suffering symptoms of CG. While we use the term complicated grief, it is important to note that using this scale is not sufficient for a diagnosis of CG, for which patients need to undergo a clinical interview conducted by an experienced practitioner.

From the clinical point of view, the four factors identified in our factor analyses allows the clinician to tailor psychological intervention to the patient's symptoms. ICG is being reinterpreted as a measure of "traumatic grief" because, in the author's view, its content reflects "the two underlying dimensions of the syndrome (i.e., trauma and separation distress")[23]. Although the ICG disregards other potentially worrisome symptoms, such as guilt or avoidance of traumatic stimuli associated with other psychiatric disorders, it is a practical tool for everyday clinicians.

The Spanish version of ICG adapted to bereaved drug dependent users shows sound psychometric properties. Internal consistency of the Spanish ICG was high. Cronbach's alpha was 0.922 and each item had a substantive correlation with the total. The current research found four factors and that were conceptually consistent and that support the multidimensionality of symptoms of CG as Limonero et al. (2009) suggested. The difference between our study and Limonero et al. (2009) was the number of factors in each

Table 3 Canonical solution for Coping Strategies predicting ICG factors for Function 1

	Coef.	r_s	r_s^2 (%)
Problem solving	-0.247	-0.347	12.04
Self criticism	0.056	-0.378	14.28
Express emotions	-0.410	-0.460	21.16
Wishful thinking	-0.058	-0.517	26.72
Social support	-0.019	-0.116	1.34
Cognitive restructuring	-0.113	-0.322	10.36
Problem avoidance	0.011	-0.291	8.46
Social withdrawal	-0.846	-0.805	64.80
Factor 1. Discomfort	-0.555	-0.282	7.95
Factor 2. Non-acceptance	-0.578	-0.271	7.34
Factor 3. Loneliness	0.676	0.221	4.88
Factor 4. Presence deceased	0.869	0.619	38.31

Table 4 Canonical solution for Clinical Syndromes predicting ICG factors for Function 1

	Coef.	r_s	r_s^2 (%)
Post-traumatic Stress Disorder	-0.709	-0.939	88.17
Major Depression	-0.671	-0.815	66.42
Dysthymia	0.374	-0.674	45.42
Anxiety	0.043	-0.806	64.96
Bipolar	-0.093	-0.546	29.81
Delusional disorder	-0.204	-0.591	34.92
Thought disorder	0.126	-0.770	59.29
Factor 1. Discomfort	0.995	0.843	71.06
Factor 2. Non-acceptance	0.198	0.510	26.01
Factor 3. Loneliness	-0.520	0.042	0.17
Factor 4. Presence deceased	-0.340	0.005	<0.01

study and that Limonero and their colleagues did the study in a non-SUD population. Limonero et al. (2009) found three factors (memories of the deceased, empty feelings and presence-experience of the deceased) whereas the current study four factors (discomfort, non-acceptance, loneliness and presence of the deceased). The first factor "discomfort", included memories, beliefs and negative feelings such as feeling yearning, anger, shock, pain, avoidance and bitterness. The second once comprised statements related to "non-acceptance", such as feeling empty, envious, unfairness, and thoughts about the deceased. The third "loneliness" included trust, feeling distant and alone. The last one, "presence of the deceased", was defined as seeing and hearing the voice of the significant person. Each factor showed internal consistency presenting a good Cronbach's alpha. The difference between both Spanish studies is in relation to the first two factors, which the current study has converted into three.

In contrast to the findings among the non-SUD bereaved sample, our study underlines one characteristic of SUD individuals which is the difficulties of accepting the reality so the drug can be taken to avoid their problems, circumstances, and the reality. The results showed how this feature of SUD participants is as important as the second factor._In the present study, in the first factor we noted a division between "emotional" component and the "cognitive" component. These results highlight the importance of emotional components within the bereavement process as other studies explained[3,24]. Apart from that, it is important to consider that the fourth factor from our study called "presence of the deceased" was homogenized in contrast with the third factor of Limonero research. In the current study the last factor is based only with the two items related to presence of the deceased (hear the voice and seeing the deceased).

The present results support the concurrent construct validity of the Spanish version of the ICG. For example, social support, emotional expression and problem resolving capacities showed an inverse associations between factors 1 and 2 and factors 3 and 4. The discriminant capacity of the ICG items was high (except for 12, 15 and 16 items). The squared canonical correlation for the social support and the coping strategies showed a full model statistically significant. From the clinical point of view, more perceived social support is associated with feeling less isolated and experiencing less CG symptomatology. The negative correlation between the total score of ICG and the Social Support scale underline the importance of having social

support to adapt better to the bereavement process, as several studies suggested[25,26].

Related to the clinical syndromes and construct validity, depression and PTSD were the disorders which showed high association with factors 1 and 3. It is interesting to note the significant correlation between the fourth factor and anxiety and post traumatic stress disorder. Apparently, the last factor, "presence of deceased", might indicate psychotic symptoms, but we found no correlation between this factor and the psychotic disorders assessed, such as delusional or thought disorder, indicating that this symptomatology is specific to CG such as intrusive thoughts or images, as different authors noted[27]. Indeed, there is a lot of research showing that hallucinations of the deceased are normative after loss[28-31]. However, more investigation is needed to assess the validity of the present results in an accurate way.

In summary, our results provided information about the multidimensionality of CG symptomatology construct which Limonero and collaborators had proved in their Spanish adaptation of the ICG. In addition, the Spanish version of the ICG performed well among our SUD sample. In fact, these four factors (discomfort, difficulties to accept the death, isolation and the presence of the deceased) are characteristic traits of CG symptomatology, as different studies suggested[32-34]. Taking into account the results, the ICG can be used to identify difficulties among people with SUD.

To our knowledge, this is the first study to analyse the factor structure of ICG among bereaved drug dependent people. Most relevant to our focus is that the Spanish ICG performs well among SUD population.

LIMITATIONS

The present study presented some limitations, such as the cross-sectional transversal design of the research. Future studies should analyze the clinical utility of the four factors as well as the test inter-examiner reliability and the test-retest. Furthermore, there was no control group from the general population not suffering from SUD. Despite these limitations, our study shows significant data related to the specificity of the sample.

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CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

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Is there any relationship between drug users' bereavement and substance consumption?

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Summary

Background: People with substance use disorders frequently present life stories marked by suffering and loss. Few studies have assessed the role of bereavement of a significant person in the drug dependent population. Aim: This study explored the loss of a significant person among 196 bereaved drug dependent patients before and after the age when they consider that their drug consumption increased. **Methods:** Socio-demographic characteristics, bereavement and drug related variables were examined. Perceived relationship between the significant loss and drug consumption was also assessed. Complicated grief symptomatology was measured by the Spanish version of the Inventory of Complicated Grief (ICG). **Results:** 83.2% of all participants stated that, after suffering the loss, they increased drug consumption. 12.3% of the patients who first increased drug consumption and after suffered the loss of a significant person reported a relapse after the loss. However, 54% of the participants who first experienced the loss and after increased their drug consumption did not perceive any relationship between the loss and their own drug consumption. The most frequent losses were the parents (father and mother), sibling being the third most significant loss. 34.2% of patients reported symptoms of complicated grief. **Conclusions:** Results show a relationship between the loss and the important increase of substance consumption. This study suggests the importance of including the process of grief psychotherapy within the treatment of drug dishabituation for those cases which presented symptoms of complicated grief.

Key Words: Substance use disorder; complicated grief; bereavement.

1. Introduction

Addiction is a mental health problem implicating issues at different levels, such as traumatic experiences during childhood [10], economic instability, unemployment [34], marital problems, accidents [23, 24], social exclusion [3, 9], physical complications, as well as medical difficulties and high psychiatric comorbidity [1, 30]. These biopsychosocial factors could raise the vulnerability and even exacerbate the prognosis of the addiction. Substance abusers and the drug dependent population frequently present life stories marked by suffering and loss [29]. The loss of a significant person due to death is one of the most stressful life-events [16, 17, 29]. Although the vast majority of people are able to manage the loss, a considerable minority is predisposed to express persistent and disabling symptoms [20, 36]. Complicated grief (CG) has been defined as a deviation from the normal (in cultural and societal terms) grief experience in either time course, intensity, or both, entailing a chronic and more intense emotional experience or an inhibited response, which either lacks the usual symptoms or in which onset of symptoms is delayed [33].

Accordingly, different studies have reported a link between losing a significant person and drug consumption among substance users [2, 11, 21, 38]. Some researches show an incidence of early loss of at least one of the parents among addicted patients [8,

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15, 37]. In this regard, a study from the comparison between heroin consumers and non-consumers, observed that one of the main differences between the two groups is that heroin users have experienced the loss of one of their parents before the age of 16 [14]. In another study, half of opioid-dependent patients and 40% of cocaine-dependent patients experienced the loss of both parents before the age of 21 [12]. Furthermore, different authors based on a descriptive study reporting family characteristics of drug-related deaths examined at the Viennese Institute of Forensic Medicine, stated that 80% of addicted patients have experienced at least one traumatic event during their childhood, such as the loss of a parent [27]. Likewise, several authors have noted the possible relationship between loss of a significant other and drug consumption among substance dependence [13, 21, 38]. In the same view, 20% of individuals diagnosed with an alcohol dependence disorder start drinking alcohol after a loss [6]. After studying the reasons for relapse in 270 heroin addicts, users who have experienced stressful life events, such as a recent loss, show greater difficulty in adapting to a new lifestyle without drugs [18]. According to the study, almost half of the respondents (48%) used heroin as an adaptive attempt to regulate and control high anxiety and at the same time as a way of managing stressful life events. The link between bereavement and alcohol problems was corroborated among a sample of a bereaved 4457 patients who had lost a close relative in the past three years [25]. In the same vein, 93.9% of after the dependence age of onset reported the death of a close friend or relative among 82 heroin-dependent patients. According to these authors, the addiction might be affected by traumatic life events but it also impacts their development [29]. Life events in drug-dependent people can prompt the initial contact with the substance but at the same time, it could also affect the course of the disease by intensifying craving [32].

Taking into account these studies, it is important to establish the relationship between the loss of a significant one and drug consumption among bereaved people diagnosed with substance use disorder in order to address this issue in treatment. However, the above studies have not paid close attention to the course over time of bereavement experiences in relationship to changes in drug consumption. For that reason, the current study aims to shed light on the differences in bereavement, addiction, as well as sociodemographic variables, between persons who first lost a significant person and afterwards increased drug consumption ("B-A"), and those individuals who started using drugs before experiencing the loss of a significant person ("A-B").

2. Methods

2.1. Participants

The participants in this study were patients receiving treatment at the Public Addiction Treatment Centre in Girona (Catalonia, Spain). The sample consisted of 196 adults (78.1% male). The inclusion criteria were 1) they had a diagnosis of alcohol, cocaine or heroin dependence carried out by clinical specialists in the centre according to DSM-IV-TR criteria, 2) they suffered a loss of a significant person (family, best friend or partner) at some time in their life, but at least a year previously to the interview, and any bereavement within the year previous to the interview would exclude them from this study and 3) abstinence during the last month to avoid toxic effect of drugs.

This study is part of a wider investigation based on symptomatology of CG among drug dependent people. For this reason, the sample size was calculated based on the estimated prevalence of CG in the general population and an assumed prevalence of 15%, with an alpha level of 0.05 for a precision of ± 0.05. In order to retain the required number of participants, we had to interview 205 patients because 9 cases were rejected for not fulfilling the criteria.

We divided the sample into two groups ("B-A" and "A-B") in order to assess the possible effect of bereavement on drug consumption. These categories were made from the difference between how old the patient was when the significant person died and at what age the patient recalled that they increased the frequency of consumption of primary drug. Participants classified in "B-A" (preaddiction bereavement) had a significant loss (at an average of 21 years, SD= 10.7) before the age in which they increased the consumption of drugs (M=30.8; SD=11.02). Hence, they suffered a bereavement process before increasing drug consumption. The average age of onset of the drug consumption was 18.5 years (SD=8.7). Patients who first increased drug consumption (M=22.23; SD=8.40) and after suffered the loss of a significant person (at 37.9 years and SD= 10.53) were grouped in "A-B" (post addiction bereavement). The average age of onset of drug consumption was 15.62 (SD= 5.28). Most of the participants were categorised in the second one "A-B" (74.9%).

2.2. Instruments

We used a self-constructed questionnaire to measure sociodemographic variables, drug use-related variables as well as bereavement-related characteristics.

Several sociodemographic characteristics were assessed: age, gender, marital status (single, married or with partner, separated or divorced, widowed), education (primary or college education), and work status (working, or retired, unemployed, or on disability aid).

The drug use-related variables determined were: main drug dependence (alcohol, cocaine or heroin), age at onset of, and age at increase in the consumption of the drug (determined by the question of how old the patient was when he/she first increased consumption of the main drug). The participant was asked if she/he took prescribed pills. The perceived relationship between the death of a significant person and drug consumption was also inquired into (the relationship was determined by asking if the participant considered that there was a relationship between the loss and that person's main substance consumption).

Bereavement-related variables asked about were: the most significant/closest loss experience, time since death (in years), what age the participant was when they had lost the significant person, and circumstances of death (natural or illness-related and traumatic). Level of current of the significant loss was reported on a subjective 10-point Likert scale (0–no effect to 10–maximum level of effect exerted by the loss as evaluated at the moment of the interview).

Complicated grief was assessed using the Spanish version of the Inventory of Complicated Grief (ICG) [17]. It comprises 19 items. Responses are provided on a 5-point Likert scale to assess an increase in severity (0–never, 1–seldom, 2–sometimes, 3–often and 4–always) (maximum score: 76). The cut-off point was 25, and it was based on the English version of the ICG [24]. We categorized a respondent as having symptoms of CG if the total score was higher than 25. The internal consistency of the Spanish version was high (Cronbach's alpha = .88; test-retest reliability = .81).

2.3. Procedure

Participants who met the three inclusion criteria were informed by their therapist about possible participation in the study. If patients agreed to collaborate, the psychologist (who is the first author) called each patient to arrange an appropriate time for an interview in the centre. All participants were informed about the study procedure as well as terms of confidentiality. The average time for each interview was one hour and a half in total. Informed consent was obtained from all participants and the protocol was approved by the Institutional Ethics and Research Review Board of Institut Assistència Sanitària (IAS).

2.4. Statistical Analyses

In order to compare "B-A" group and "A-B" group we used chi-square tests, to identify relationships between the categorical variables (applying the Yates correction when necessary) and the Student's t-tests, to determine the relationship between the quantitative and the qualitative variables. The results are expressed as absolute numbers, percentages, as well as showing the means and standard deviations. The categorization of questions about the relationship between the loss and the drug itself was based on five possible answers (No; Yes, increase; Yes, relapse; Yes, abstemious and Yes, initiation). A statistical significance of 0.05 was set for testing the hypotheses. All analysis were conducted with the Statistical Package for the Social Sciences (SPSS 21.0) for Windows.

3. Results

3.1. Sociodemographic characteristics

Gender proportions were different between the groups. There were more women in the "B-A" group (pre-addiction bereavement). Almost half of the B-A participants were married or with a partner and 10.3% of "A-B" participants were widowed.

Related to the level of education, more "B-A" participants stated of having secondary-level education, compared to the "A-B" group. The majority of participants had no working status which means that they were either unemployed, retired or with disability aid (Table 1).

3.2. Drug-related characteristics

As Table 2 shows, the first main diagnosis was alcohol dependence. One difference between the groups is that the secondary main diagnosis was 22% having cocaine dependence in "B-A" group, whereas in the "A-B" group the secondary main diagnosis was heroin dependence (19.9%). The relationship be-

Table 1. Sociodemographic characteristics of the bereaved sample

	B-A (n=50)	A-B (n=146)	p
Age, M (SD)	43.32 (9.86)	46.35 (10.15)	0.06[a]
Gender, N (%)			0.046[b]
Man	34 (68)	119 (81.5)	
Woman	16 (32)	27 (18.5)	
Marital status, N (%)			0.184[b]
Single	9 (18)	35 (24)	
Married/Partner	21 (42)	52 (35.6)	
Separated/Divorced	19 (38)	44 (30.1)	
Widowed	1 (2)	15 (10.3)	
Education, N (%)			0.179[b]
Primary	10 (20.4)	49 (34.5)	
Secondary	38 (79.6)	90 (65.5)	
Working situation, N (%)			
Work	19 (38)	53 (36.3)	0.830[b]
Others*	31 (62)	93 (63.7)	

* Retired, unemployed, inactive, on invalidity benefit; [a] t-test test; [b] chi-square test

tween prescribed medicine and "B-A" and "A-B" was statistically significant (p=.019). More than a half of the individuals of "A-B" reported taking prescribed pills.

In Table 3 the subjective answer of the participants relating to whether they consider that any relationship exists between the loss of the significant person and their own drug consumption is displayed. There was a statistically significant difference: In the "B-A" group almost half of the individuals considered that there was no of relation between the loss and their consumption of drugs, while a significantly larger proportion - 66.4% - of the participants in the "A-B" reported a significant relationship. In this regard, the loss negatively affected their drug consumption, with 45.2% increasing their consumption and 12.3 suffering a relapse after the loss. However, it should be noted that 8.9% of individuals of "A-B" reported being abstemious after the loss.

3.3. Bereavement characteristics

Almost half of the "B-A" individuals lost their father (44%), 16% lost their mother and 16% their sibling. Of the "A-B" participants, 30.8% lost their father, 19.9% lost their mother and 19.2% their sibling. With regard to circumstances of death, the majority of respondents in both groups reported natural circumstances. The mean time since the death of the significant person was 21.60 years for the "B-A" group and 8.42 years for the "A-B" group (Table 3). Participants also reported their level of upset on losing the significant person (M=6,83; SD=3.06). There was a significant difference (p=.007) between "B-A" group

Table 2. Addiction variables of the participants.

	B-A (n=50)	A-B (n=146)	P
Main diagnosis, N (%)			0.066[a]
Alcohol	32 (64)	103 (70.5)	
Cocaine	11 (22)	14 (9.6)	
Heroin	7 (14)	29 (19.9)	
Age increment, M (SD)	30.82 (11.2)	22.23 (8.40)	<0.001[b]
Prescribed medication, N (%)			0.019[a]
Yes	31 (62)	115 (78.8)	
No	19 (38)	31 (21.2)	

[a] chi-square test; [b] t-test test.

Table 3. Perceived relationship between the significant loss and drug consumption. (n (%))

	B-A (n=50)	A-B (n=146)	p
No	27 (54)	49 (33.6)	<0.001
Yes, increase	19 (38)	66 (45.2)	
Yes, relapse	0 (0)	18 (12.3)	
Yes, abstemious	0 (0)	13 (8.9)	
Yes, initiation	4 (8)	0 (0)	

(M=5.81; SD=3.47) and "A-B" group (M=7.17; SD=2.83). The "A-B" group reported a higher level of suffering related to the death at the time of the interview. Similarly, the symptoms of CG were significantly different between the groups (p=.021). The "A-B" participants reported higher scores in the CG test (M= 24; S.D.= 17.12) than the "B-A" individuals (M= 15.26; S.D= 13.54). 39% of the "A-B" patients reported CG-level of symptomatology.

4. Discussion

The current study aimed to increase knowledge about relationships between bereavement, addiction, and sociodemographic variables among persons who suffered bereavement before becoming addicted, compared with those whose bereavement experience occurred after their addiction had begun. The larger group was the "A-B" group (74.9%). These persons, reported an earlier occurrence of the increase of drug consumption and higher symptomatology of CG than "B-A". 39% of the "A-B" group showed symptoms of CG, which means that almost four out of ten of those patients who were in treatment and experienced a death of somebody significant, presented symptomatology of CG. In both groups the most frequent loss was the father which was the same in line with other studies [27]. Related to gender issue, more women were in the "B-A" group which indicate an earlier bereavement. In this regard, several studies underlined differences between women and men [31, 35].

Turning to the perceived relationship between loss and their own drug consumption, 54% of "B-A" participants did not perceive any relationship between

Table 4. Bereavement characteristics of the participants.

	B-A (n=50)	A-B (n=146)	p
Relationship profile of deceased, n (%)			0.062[a]
Father	22 (44)	45 (30.8)	
Mother	8 (16)	29 (19.9)	
Sibling	8 (16)	28 (19.2)	
Grandparent	6 (12)	5 (3.4)	
Spouse	1 (2)	18 (12.3)	
Friend	3 (6)	11 (7.5)	
Others	2 (6)	10 (19.1)	
Circumstances, n (%)			0.880[a]
Natural	36 (72)	106 (73.1)	
Traumatic*0	14 (28)	39 (26.9)	
Time since loss□, M (SD)	22.32 (12.51)	8.42 (7.89)	<0.001[b]
Age patient±, M (SD)	21 (10.73)	37.92 (10.52)	<0.001[b]
Symptoms of CG, n (%)			0.014[a]
Yes	10 (20)	57 (39)	
No	40 (80)	89 (61)	
Symptoms of CG, M (SD)	15.64 (13.74)	23.82 (17.18)	0.001[b]

[a] chi-square test; [b] t-test test. * Traumatic: accident, suicide, homicide and overdose; □ time since loss in years; ± age of the participant when the lost happened.

loss and their own drug use. Regarding resilience, it should be noted that 8.9% of all participants reported being abstemious after the loss. However, 83.2% of all participants reported that after the loss they increased their drug consumption. Regarding this, more than a half of the "A-B" individuals reported a negative relation, 45.2% informed that they increased consumption after the loss, and 12.3% suffered a relapse. This underlines the vulnerability of the participants to addiction and also psychiatric comorbidity. In this regard, high psychiatric scores among an alcoholic sample are directly linked with the number of stressful life events experienced [5]. 60% of 384 opiate addicts had experienced one traumatic event in childhood (before age 15) and 30% at least two traumatic events [28]. These authors also found that patients whose drug use followed early childhood trauma are characterised as having the most severe psychopathology and the lowest indices of social strengths and probably represent the clients with the poorest prognosis in treatment. Drug abusers may be people with a variety of background traumas and these accumulated traumas could influence high risk behaviour [8]. In similar vein, a relationship between life events and substance dependence clearly exists [29].

5. Conclusions

This study highlights the relationship between drug users' bereavement and their substance consumption. Losing a significant person was perceived as a risk factor to increase drug consumption, especially among those participants who first increased drug consumption and after suffered the loss. At a therapeutic level, it would be appropriate to take into account whether the patients have experienced the loss of a significant person in their life and how the factors could affect them.

6. Clinical Implications

These results show the need for further investigation of the relationship between the experience of a loss among the drug dependent population on the one hand and the importance of including the process of grief psychotherapy and psychopharmacological treatment when it is needed within the treatment of drug dishabituation on the other, especially for those cases in which symptoms of CG were present. Several authors have indeed noted the need for grief psychotherapy [4, 7, 11, 22, 25] in addiction treatment, in order to achieve the maintenance of abstinence, as loss appears to be an "obstructive" factor to abstinence, and also the need for adaptive coping strategies and tools for recovery.

Limitations

This study had a number of limitations. We relied exclusively on self-report measures. The age of onset of increased drug consumption as well as the age when the participant lost the significant person was based on retrospective recall. Moreover, it was difficult to ensure abstinence, especially from secondary addictions such as tobacco or cannabis, of participants. The present research had a cross-sectional design, with no control group, hence causal inferences cannot be made.

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Conflict of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Ethics

Authors confirm that the submitted study was conducted according to the WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects. The study was approved by the Institutional Ethics and Research Review Board of Institut Assistència Sanitària (IAS). All patients gave their informed consent to the anonymous use of their clinical data for this independent study.

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Clinical syndromes, Complicated Grief and Substance Use Disorder

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Summary

Background: People with substance use disorders present high psychopathological comorbidity. Research has demonstrated that bereaved individuals with Complicated Grief (CG) symptomatology present unusually severe and prolonged symptoms, and that affects important domains. **Aim:** This study aimed to assess the association between clinical syndromes and CG symptoms among patients with Substance User Disorder (SUD). **Methods:** A convenience sample of 196 bereaved drug-dependent patients was studied. Sociodemographic characteristics, bereavement and drug-related variables as well as psychopathology were examined. CG symptomatology was measured by the Spanish version of the Inventory of Complicated Grief (ICG). Anxiety, Major Depressive Disorder and Posttraumatic Stress Disorder (PSTD) were assessed by utilizing the clinical syndrome section of the Spanish version of MCMI-III. A logistic regression analysis was adjusted to identify which variables were associated with CG symptoms. **Results:** 78.1% were men, and mean age in the sample was 45.59 years (SD=10.14). 34.2% of participants reported symptomatology of CG. Individuals with CG symptoms showed 31.2% higher frequency of Anxiety, 12.5% higher Major Depression and 7.4% higher PTSD. The symptomatology of CG was associated with the presence of Major Depressive Disorder (OR= 1.029) as well as PTSD (OR=1.041). **Conclusions:** Depression and PTSD were associated with symptomatology of CG. This study suggests the importance of carrying out a rigorous and accurate differential diagnosis of CG symptomatology as well as clinical syndromes among addicted people.

Key Words: Substance Use Disorder, Complicated Grief, Anxiety, Major Depressive Disorder, PTSD

1. Introduction

Although psychological responses to loss of a significant person are complex and vary in intensity and types of symptoms [2, 44], majority of patients can manage the loss with minimal disruptions in functioning, while others experience initially acute symptoms that gradually subside [22]. However, a subset of bereaved individuals, usually 10-15% of the total, experience persistent and disabling symptoms [4, 23] called complicated grief (CG) [48]. This symptomatology includes intense feelings of yearning, longing or emotional pain, separation distress, frequent preoccupying thoughts and memories of the deceased person, a feeling of disbelief or an inability to accept the loss, avoidance of and intense distress at reminders, difficulty in imagining a meaningful future without the deceased person, and substantial impairments to social and role obligations [3, 46].

In addition, several studies have further supported the fact that symptoms of CG are separable from other psychiatric diagnoses such as Major Depressive Disorder, Post-traumatic Stress Disorder (PTSD) and Anxiety [2, 5, 13, 18, 31, 37, 42]. These studies provide evidence that the different syndromes are not isomorphic and the core symptom clusters are empirically dissociable [12]. In this sense, the point to be made is that the response to the PTSD stressor must involve fear or horror, and is thus subjective [1] whereas a reaction to bereavement does not involve fear, although it may implicate feelings of helplessness [35]. Despite the fact that the traumatic distress symptoms of CG appear to be similar to some of the symptoms of PTSD, the separation distress compo-

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nent is unique [18]. Some authors [38] differentiate CG symptoms from those of PTSD in clarifying how the person who presents the former tends to avoid memories that evoke the absence of the deceased, or seeing things that remind them of the deceased, or remembering the deceased in any way. In PTSD, however, the person tries to avoid the memories associated with the traumatic event. As it is related to depression, CG symptomatology is defined by longing and guilt related to that specific death, and by preoccupation with thoughts and memories of the deceased. In contrast, Major Depressive Disorder is linked with general sadness, guilt, shame or low self-esteem [43]. Although CG symptoms and depression are frequently comorbid, they can occur independently [10]. From the same perspective, in studies on bereaved individuals, yearning loads highly on the grief factor, but not on depression or anxiety factors, whereas sadness loads only on a depression factor, while feeling nervous and worried loads only on an anxiety factor [16, 31, 34].

Several studies suggest that CG symptomatology is common in treatment samples in which psychiatric outpatients have being sought. Studies in clinical settings in different countries revealed that about a third of psychiatric outpatients may have symptoms of CG: that was true of 33% of psychiatric outpatients in Vancouver, [32] and 34% of psychiatric outpatients in Pakistan [36]. A German study of 73 inpatients with unipolar depression found an 18% rate of CG [15]. Those who met this criterion had greater severity of other co-occurring psychiatric disorders [42].

Taking into account the focus sample of the present study, it is important to consider the high comorbidity existing among people with SUD [6, 9, 11, 29, 30, 40, 50]. Individuals with co-occurring Major Depressive Disorder, anxiety or PTSD and SUD report more severe symptomatology, greater health problems, greater functional impairments, and fare less well in treatment, which contributes to a heightened vulnerability to relapse after discharge [8, 39]. An American study based on 401 drug-dependent individuals shows that several baseline psychiatric disorders predicted worse outcomes at follow up. Major Depressive Disorder predicted the use of a larger number of substances and having more drug dependence diagnoses and symptoms [8]. 21% of another American sample (participants in 10 geographically diverse outpatient drug treatment programmes) screened positive for depression and were significantly more likely to screen positive for anxiety (66.9%), and almost half of them for PTSD (42.9%) [41]. A Spanish study found that 36.5% of the 115 patients with cocaine dependence in treatment presented psychiatric disorder criteria [21].

There is a lack of evidence regarding clinical syndromes and CG symptomatology among SUD populations. For this reason, the present study aims to assess the association between the presence of clinical syndromes (Anxiety, Major Depressive Disorder, PTSD) and CG symptoms among bereaved people with SUD.

2. Methods

2.1. Design of the study

We used an observational and cross-sectional design.

2.2. Sample

Recruitment of patients was based on a convenience sampling procedure. The participants in this study were 196 adult patients (78.1% male) receiving treatment at the Public Addiction Treatment Centre in Girona (Catalonia, Spain). The inclusion criteria were 1) they had a diagnosis of alcohol, cocaine or heroin dependence carried out by clinical specialists in the centre according to DSM-IV-TR criteria, 2) they had suffered a loss of a significant person (family, best friend or partner) at some time in their life, but at least a year previously to the interview, and any bereavement within the year previous to the interview would exclude them from this study, and 3) abstinence during the last month to avoid the toxic effect of drugs.

2.3. Instruments

We used an ad hoc questionnaire to register sociodemographic characteristics (age, gender, marital status, education and work status), bereavement-related variables (the most significant/closest loss experience, time since death and circumstances of death), as well as drug use-related variables (main drug dependence).

Complicated grief was measured using the Spanish version of the Inventory of Complicated Grief (ICG) [17]. It consists of 19 items. Responses are provided on a 5-point Likert scale to indicate an increase in severity (0-never, 1-seldom, 2-sometimes, 3-often and 4-always) (maximum score: 76). The cut-off point was 25, it was based on the English version of the ICG [29]. We categorized a respondent as hav-

ing symptoms of CG if the total score was higher than 25. The internal consistency of the Spanish version was high (Cronbach's alpha = 0.88; test-retest reliability = 0.81).

Anxiety, Major Depressive Disorder and PTSD were assessed using the Spanish version of Millon Clinical Multiaxial Inventory-III (MCMI-III) [28]; Spanish translation by Cardenal and Sánchez-López [7]. We used the most conservative criteria with scores equal to or greater than 85 to define the presence of the clinical syndromes. The MCMI-III is a 175 item self-report questionnaire with dichotomous answers (true/false). It measures 11 clinical personality patterns, 3 traits of severe personality pathology, 7 syndromes of moderate severity, 3 severe syndromes and a validity scale with 3 modifying indices. The personality disorders scales cover the major diagnostic criteria of DSM-IV. The internal consistency ranges between 0.66 and 0.80, and the test-retest reliability for dimensional ratings has a range of 0.85 to 0.93. The test-retest reliability for the categorical diagnosis is Kappa <0.45. To correlate with the MCMI scores, SCL-90-R (Symptomatological Check List in its revised form) and the Inventory Minnesota Multiphasic Personality (MMPI) scores >0.50 were used. MCMI shows a sensitivity range of 0.44-0.92 (mean=0.60), and its predictive power has a range of 0.30 to 0.81 (mean=0.69).

2.4. Procedure

Each participant who met the three inclusion criteria was informed by his/her therapist about their possible participation in the study. If patients agreed to collaborate, the psychologist (who is the first author) called each patient to arrange an appropriate time for an interview in the centre. All participants were informed about the study procedure as well as terms of confidentiality. The average time for each interview was one hour and a half in total. Informed consent was obtained from all participants, and the protocol was approved by the Institutional Ethics and Research Review Board of the Institut Assistència Sanitària (IAS).

2.5. Data analysis

In order to compare normal grievers with complicated grievers, we used chi-square tests, to identify relationships between the categorical variables (applying the Yates correction when necessary) and the Student's t-tests, to determine the relationship between the quantitative and the qualitative variables. To assess the association between CG symptoms and clinical syndromes we performed a logistic regression. The results are expressed as absolute numbers, percentages, odds ratios, as well as showing the means and standard deviations. To assess the relation between different variables and CG, we adjusted a logistic regression model using the presence or absence of symptoms of CG (dichotomous variable) as dependent variables and the following factors as independent variables: gender (1=male; 2=female), education (1=primary; 2=secondary and beyond), marital status (married as a reference category), work status (working as a reference category), relationship with the deceased (father as a category), circumstances of death (1=natural; 2=traumatic), and the three clinical syndromes (Anxiety Disorder; PTSD and Major Depressive Disorder) as dimensional variables. A statistical significance of 0.05 was set for testing the hypotheses. All analyses were carried out using the Statistical Package for the Social Sciences (SPSS 21.0) for Windows.

3. Results

3.1. Sociodemographic and drug-related characteristics

The mean (SD) age of the clinical sample was 45.59±10.14 years and 78% (n=153) were men.

As shown in Table 1, education background was found to be statistically significant. The majority of normal grievers report a history of secondary education. With respect to working status, 67.3% of complicated grievers reported no working status.

Considering now the addiction variables, more than a half of the individuals reported alcohol dependence as the first main diagnosis (68.9%), 18.4% heroin dependence and 12.8% cocaine dependence. 74.5% of the substance use participants were taking a prescribed psychopharmacological therapy.

3.2. Bereavement variables

Among the complicated bereaved substance users, the sibling was the most frequently-experienced significant deceased person, followed by 22.4% for the father. In contrast, the father was the relative most frequently experienced (40.3%) among normal grievers. More than a half of participants with CG symptomatology (50.9%) indicated "traumatic" as the

Table 1. Sociodemographic variables				
		Normal grievers (n=129)	Complicated grievers (n=67)	p
Gender	Man	103 (79.8)	50 (74.6)	0.40 [a]
	Women	26 (20.2)	17 (25.4)	
Age, M (SD)		45.43 (10.36)	45.85 (9.7)	0.14 [b]
Marital status	Single	27 (20.9)	17 (25.4)	0.15 [a]
	Married/partner	49 (38)	24 (35.8)	
	Separated/divorced	46 (35.7)	17 (25.4)	
	Widowed	7 (5.4)	9 (13.4)	
Studies	Primary education	29 (23.2)	30 (45.5)	0.002 [a]
	Secondary and beyond	96 (76.8)	36 (54.5)	
Work status	Working	50 (38.8)	22 (32.8)	0.02 [a]
	Others*	79 (61.4)	45 (67.3)	
* Retired, unemployed, inactive, disability aid; [a] chi-square test; [b] t-test test.				

most frequent circumstance of death (Table 2).

3.3. Presence of clinical syndromes

The three disorders (Anxiety, Major Depressive Disorder and PTSD) were statistically significant as comorbidities in those patients who reported CG symptoms. Anxiety disorder was the most frequent disorder. More than a half (53.7%) of addicted individuals with CG symptoms also presented Anxiety Disorder, 17.9% presented symptoms of Major Depressive Disorder and 9% PTSD (Table 3).

3.4. Variables associated with CG symptomatology

Table 4 shows the results of a logistic regression in which scores of CGs were the dependent variables, while sociodemographic and bereavement variables as well as psychopathological disorders were considered independent variables. It was found that being a woman, together with the condition of being separated or divorced, showed an association with CG symptoms. Participants who lost their sibling reported a higher risk of presenting CG symptoms. As to comorbidity, presenting PTSD in combination with a Major Depressive Disorder was strongly associated with the symptomatology of CG.

4. Discussion

The current study aimed to increase knowledge about the relationships between CG and clinical syn-

Table 2. Bereavement variables (n (%))				
		Normal grievers (n=129)	Complicated grievers (n=67)	p
Relationship to deceased	Father	52 (40.3)	15 (22.4)	<0.001[a]
	Mother	30 (23.3)	7 (10.4)	
	Sibling	12 (9.3)	24 (35.8)	
	Grandparent	9 (7)	2 (3)	
	Friend	10 (7.8)	4 (6)	
	Spouse	9 (7)	10 (14.9)	
	Others	7 (5.4)	5 (7.5)	
Time since death, M (SD)		13.33 (11.48)	9.36 (9.78)	0.02[b]
Circumstances of death	Natural	102 (71.8)	26 (49.1)	0.003[a]
	No natural*	40 (28.2)	27 (50.9)	
CG symptoms	M, (SD)	11.37 (7.02)	41.67 (10.85)	<0.001[b]
[a] chi-square test; [b] t-test test. * No natural: Accident, Suicide, Homicide and Overdose				

Table 3. Clinical syndromes found in the sample (n (%))

		Complicated grievers (n=129)	Normal grievers (n=67)	P
Anxiety	M (SD)	82.45 (18.41)	56.04 (32.72)	0.000 [a]
	Yes	36 (53.7)	29 (22.5)	0.000 [b]
	No	31 (46.3)	100 (77.5)	
Depression	M (SD)	64.93 (22.59)	35.84 (29.31)	0.000 [a]
	Yes	12 (17.9)	7 (5.4)	0.005 [b]
	No	55 (82.1)	122 (94.6)	
PTSD	M (SD)	64.99 (17.06)	41.21 (25.58)	0.000 [a]
	Yes	6 (9)	2 (1.6)	0.013 [b]
	No	61 (91)	127 (98.4)	

[a] t-test test; [b] chi-square test

dromes among substance users. Participants with SUD reported high scores in ICG, showing 34.2% of CG symptoms, as presented in another publication arising from the same study [26]. We found that participants with CG symptoms also reported a higher frequency of clinical syndromes. Taking into account that we used the most conservative criteria by including only scores equal to or greater than 85, more than half of the individuals in the sample (53.7%) presented Anxiety Disorder, almost two out of ten (17.9%) reported Major Depressive Disorder and 9% PTSD. These results were along the same lines as those of other studies [32, 42], despite the fact that those studies were focused on psychiatric samples, whereas the current study was based specifically on people with SUD.

The final objective of this research was to identify which variables can be associated with symptoms of CG among SUD patients. Logistic regression analysis allowed us to examine the complexity of the CG construct. In connection with sociodemographic and bereavement variables, we concluded that CG symptomatology was associated with gender (being a woman), with being separated or divorced, and having lost a sibling. General population studies similarly raised the issue of gender, because of the fact that being a woman was found to carry a greater risk of developing CG symptoms than for men, as found

Table 4. Logistic regression of associated variables in CG's symptomatology

	B	E.T.	Wald	df	Sig.	Exp(B)
Age	.007	.023	.095	1	.758	1.007
Woman	1.251	.572	4.783	1	.029	3.494
No working status	-.288	.468	.377	1	.539	.750
Primary studies	-.744	.448	2.763	1	.096	.475
Marital status			8.405	3	.038	
Married or in a couple	-.918	.595	2.382	1	.123	.399
Separated or divorced	-1.753	.623	7.920	1	.005	.173
Widow	-.245	1.190	.042	1	.837	.783
Relationship with the deceased			10.265	6	.114	
Mother	.281	.658	.182	1	.670	1.324
Sibling	1.680	.641	6.861	1	.009	5.365
Grandparent	-.417	.960	.189	1	.664	.659
Friend	-.129	.868	.022	1	.882	.879
Spouse	1.096	1.058	1.073	1	.300	2.992
Others	1.047	.871	1.446	1	.229	2.850
Traumatic circumstances of death	1.069	.561	3.633	1	.057	2.912
Anxiety	.005	.015	.106	1	.745	1.005
PTSD	.040	.019	4.337	1	.037	1.041
Depression	.029	.011	7.556	1	.006	1.029
Constant	-4.652	1.456	10.208	1	.001	.010

independently in our study [19, 20, 45].

With respect to the clinical syndromes, symptoms of CG were associated with Major Depressive disorder and PTSD disorder. These two clinical syndromes reported a high association with the construct of CG symptoms. These results were along the same lines as those in other studies [6, 27, 49]. Despite overlap with the criteria for CG symptoms and Anxiety, Depression and PTSD reactions following bereavement, the phenomenological distinctiveness of CG symptoms (such as yearning, searching, disbelief), from those of bereaved-related anxiety, depression and PTSD was shown in several studies on the general population [12, 31]. To sum up, CG symptoms showed incremental validity in predicting physical problems after checking for the effects of Major Depressive disorder, anxiety and PTSD following the bereavement in question [12].

Limitations

This study had a number of limitations. We relied exclusively on self-report measures. Moreover, the clinical syndromes were assessed with the psychometric test focus on personality disorders. The present study had a cross-sectional design instead of a longitudinal design; hence causal inferences cannot be made.

5. Clinical implications

The comorbidities portend challenges that lie ahead for patients and clinicians alike [40]. It is highly valuable to have clear correlations between specific comorbid psychiatric disorders and SUD in order to appropriately treat patients [8]. At a therapeutic level, it would be appropriate to take into account whether the patients have experienced the loss of a significant person in their life and how the factors could affect them. Moreover, most individuals with undiagnosed CG would be relieved to know that their symptoms are indicative of an identifiable syndrome and might be interested in receiving treatment for their grief [14]. Finding clear correlations between specific comorbid psychiatric disorders for those in substance use treatment would have important implications for predicting treatment outcomes [8, 51].

6. Conclusions

This study highlights psychiatric comorbidity among substance users. Our data demonstrate that comorbid disorders may be a risk factor for CG symptomatology. Specifically, our results indicate that Major Depressive disorder and PTSD are clinical syndromes related to CG symptomatology.

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Contributors

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Conflict of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Ethics

Authors confirm that the submitted study was conducted according to the WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects. Informed consent was obtained from all participants, and the protocol was approved by the Institutional Ethics and Research Review Board of the Institut Assistència Sanitària (IAS).

Note

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Understanding complicated grief and personality disorders in a bereaved substance users' sample: a network analysis approach

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Abstract

Background. The presence of personality disorders is greatly prevalent among substance users. Personality disorders could increase vulnerability to Complicated Grief. Bereavement is commonly overlooked in substance users. The main objective of this study was to identify relationships between personality disorders and Complicated Grief among a bereaved substance user population.

Methods. Sociodemographic variables, Complicated Grief and personality disorders were assessed in a sample of 196 bereaved substance users (78.1% men). Pearson and Spearman correlation and network analysis were performed.

Results. Complicated Grief was associated with Schizotypal, Depressive, Borderline and Paranoid personality disorders ($p<0.001$, $\rho>0.4$). Related to the degree centrality, the most central personality disorders in the network are Borderline and Schizotypal which have a link with 10 variables out of 16. Moreover, two negatively correlated clusters of personality disorders were found.

Conclusions. Network analysis provides a description of those personality disorders more correlated with Complicated Grief which is essential to design and improve addiction treatments.

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Abstract

Mammalian spermatozoa acquire functionality during epididymal maturation and ability to penetrate and fertilize the oocyte during capacitation. The aim of this study was to investigate the impact of epididymal maturation, ejaculation and capacitation on phosphotyrosine content of sperm proteins. Western blot, immunocytochemical and flow cytometry analyses demonstrated that epididymal maturation *in vivo* is associated with a progressive loss of phosphotyrosine residues of the sperm head followed by a subtle increase after *in vitro* capacitation. As cells pass from caput to cauda epididymis, tyrosine phosphorylation becomes confined to a triangular band over the posterior part of midacrosome region, whereas *in vitro* capacitation causes a spread labeling over the whole head. Different bands with phosphotyrosine residues were detected during epididymal maturation and after *in vitro* capacitation: 1) 93, 66 and 45 kDa bands with specific phosphotyrosine expression in immature spermatozoa; 2) 76, 23 and 12 kDa bands with specific phosphotyrosine expression in mature spermatozoa, being significantly increased in their expression after *in vitro* capacitation; 3) 49, 40, 37, 30, 26 and 25 kDa constitutive bands that increased their phosphotyrosine expression after maturation and/or *in vitro* capacitation; and 4) 28 and 20 kDa bands with a specific phosphotyrosine expression in *in vitro* capacitated spermatozoa. These results provided integral novel data of expression and location of phosphotyrosine residues during epididymal maturation, ejaculation and *in vitro* capacitation of boar spermatozoa. Two new constitutive proteins bands of 26 and 25 kDa with phosphotyrosine residues were also identified.

Keywords

capacitation; epididymis; phosphotyrosine proteins; protein processing

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Risk of Suicide and Dysfunctional Patterns of Personality among Bereaved Substance Users

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Abstract: *Background*: Research has shown that suicide is a phenomenon highly present among the drug dependent population. Different studies have demonstrated an upraised level of comorbidity between personality disorders (PD) and substance use disorders (SUD). This study aimed to describe which PDs are more frequent among those patients with a risk of suicide. *Methods*: The study was based on a consecutive non-probabilistic convenience sample of 196 bereaved patients attended to in a Public Addiction Center in Girona (Spain). Sociodemographic data, as well as suicide and drug related characteristics were recorded. The risk of suicide was assessed with the Spanish version of "Risk of suicide". Personality disorders were measured with the Spanish version of Millon Multiaxial Clinical Inventory. *Results*: The PDs more associated with the presence of risk of suicide were depressive, avoidant, schizotypal and borderline disorders. However, the histrionic, narcissistic and compulsive PDs are inversely associated with risk of suicide even though the narcissistic scale had no statistical correlation. *Conclusions*: The risk of suicide is a significant factor to take into account related to patients with SUD and especially with the presence of specific PDs. These findings underline the importance of diagnosing and treating rigorously patients with SUD.

Keywords: risk of suicide; personality disorders; substance use disorder

1. Introduction

Approximately 800,000 people die due to suicide around the world every year [1,2]. Suicidal risk is a very complex behavior that is influenced by interacting biological, genetic, psychological, social, environmental and situational factors, as several authors have described [3,4].

The link between the risk of suicide and substance use disorders (SUD) is well documented [5–8]. Li and collaborators [9] showed that the risk of suicide was 7.5 times higher in males and 11.7 times higher in females with a mental or SUD compared to males and females with no disorder. In another recent study among the SUD population, Masferrer et al. [10] found that 61.2% of 196 bereaved SUD patients reported a risk of suicide in a large study focused on describing related variables of risk of suicide among bereaved addicted patients. Taking into account the connection between the risk of suicide and SUD, our interest is to analyze two important variables, personality disorder and risk of suicide, because it could have an important influence on the particular and complex association between these constructs. Our interest is to study the risk of suicide as associated with the comorbid dysfunctional patterns of personality in SUD patients.

Personality Disorders (PDs) are defined as inflexible and maladaptive personality traits that are exhibited in a wide range of personal and interpersonal contexts [11]. The Diagnostic and Statistical Manual of Mental Disorders 5 [11], in section II, defines PDs as categorical entities. However, based on the discussion of early research [12–16], PDs have been characterized as dimensional constructs related to a framework that provides a unified model of psychopathology established on shared personality traits. In fact, Diagnostic and Statistical Manual of Mental Disorders DSM-5, in section III, proposes a dimensional alternative model. In the framework of this dimensional approach of psychopathology, Millon's integrative model of personality disorders [17,18] proposes an explanation of the structure of personality styles on the background of ecological adaptation. Millon classifies personality disorders in accordance with four main dimensions: Personalities with difficulties in taking pleasure (i.e., with schizoid, avoidant or depressive disorders), personalities with interpersonal problems (with dependent, histrionic, narcissistic or antisocial disorders), personalities with intrapsychic conflicts (with sadistic, compulsive, negativistic or masochistic disorders) and personalities with structural deficits (with schizotypal, borderline or paranoid disorders). The latter three pathological personality patterns (schizotypal, borderline and paranoid) represent, in terms of Millon's theory, more advanced stages of personality pathology and structural impairment.

PDs can seriously influence the course, prognosis and the treatment outcomes of SUDs [19]. Reporting a diagnosis of PD is linked with greater impairments as well as a lower quality of life [20,21]. The presence of PD is a greatly prevalent comorbid disorder among substance users [22–25]. In fact, different studies have demonstrated a high level of comorbidity between PD and SUD [26–31]. As Krueger and Eaton [32] stated, comorbidity is the rule not the exception. In this regard, Gonzalez [33] found a prevalence of any personality disorder of 42% among a sample of 53 alcohol and drug dependent inpatients. Colpaert and collaborators [27] reported a rate of 42.6% for at least one PD among 274 patients admitted to a residential substance abuse treatment. Casadio et al. [26] described a rate of 62.2% among addiction outpatients. Moreover, Verheul [19] concluded that rates of PDs among the drug dependent population are four times higher than among the general population.

Bearing in mind the negative impact of PDs and the potential risk of suicide, this study aimed to describe which dysfunctional patterns of personality are more frequent among those SUD patients with a risk of suicide and which dysfunctional patterns of personality are more frequent among those without a risk of suicide.

2. Material and Methods

The current study is part of wider research. The main goal of this research was to describe the complicated grief symptomatology among a sample of 196 bereaved SUD patients. For more information, see Masferrer et al. [10].

2.1. Participants

The current research was based on a consecutive non-probabilistic convenience sample of individuals (n = 196) attended the Public Addiction Treatment Centre in Girona (Catalonia, Spain). To join the study, patients had to meet the following three inclusion criteria: (a) they had a diagnosis of substance use disorder (SUD) (alcohol, cocaine or heroin dependence) according to the 4th revised edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria; (b) loss of a significant person (family, best friend or partner) at some time in their life, but at least a year previously to the interview; and (c) abstinence during the last month to avoid any toxic effects of drugs. The majority of patients (78.1%) were male, more than a third (37.2%) were married or with a partner. Related to the main drug diagnosis, the majority of the patients (68.9%) reported alcohol dependence, 18.4% heroin dependence and 12.8% cocaine dependence.

2.2. Measures

For the assessment of the risk of suicide, we used the Spanish version of the *Risk of Suicide* (RS) from Plutchick et al. [34]. The RS could discriminate between individuals and patients with no suicide attempts and those having a history of them. It consists of 15 items with dichotomous responses (yes/no). The RS embraces issues about previous attempts, ideation intensity of current feelings of depression and hopelessness, and other aspects of the attempts. The total score is obtained by summing all items (maximum score 15). The cut-off suggested by the authors of the Spanish version [35] was 6. Internal consistency of the test is 0.90.

Personality disorders were measured by the *Millon Multiaxial Clinical Inventory* [36], the Spanish translation by Cardenal and Sánchez-López [37]. The MCMI-III consists of 175 items with dichotomous answers (true/false), a self-report questionnaire that measures 11 clinical personality patterns, 3 traits of severe personality pathology, 7 syndromes of moderate severity, 3 severe syndromes and a validity scale and 3 modifying indices. The PDs scales cover major diagnostic criteria of DSM-IV-TR. We adopted the most conservative criteria with scores equal or greater than 85 to determine the presence of the PDs. Clinical personality patterns (schizoid, avoidant, depressive, dependent, histrionic, narcissistic, antisocial, sadistic, compulsive, negativistic and masochistic) and 3 traits of severe personality pathology (schizotypal, borderline, and paranoid) were used in the current research.

2.3. Procedure

Those patients who met the three inclusion criteria were informed by their therapist about potential participation in the study. The research procedure consisted of a single visit with a psychologist who administered the questionnaires included in the study protocol. All patients were previously informed about the study procedure as well as terms of confidentiality. Informed consent was obtained from all participants and the protocol was approved by the Institutional Ethics and Research Review Board of the Institut Assistència Sanitària (IAS) (No. S041-779).

2.4. Statistical Analyses

The risk of suicide was measured as the relative frequency and the 95% level of confidence of participants above the RS cut-off point. In order to compare individuals with and without risk of suicide, we performed a bivariate analysis of the PD scores of the patients according to the risk of suicide. According to the nonparametric Kolmogorov Sminov test, the different Millon's scales did not follow a normal distribution and the significance was below 0.05 (except for the negativist scale which is the only scale with normal distribution with a signification of 0.072). Due to the small group of PDs, we used a non-parametric statistical test. When PDs were defined as categorical variables, we used a Fischer Exact test and when PDs were defined as a dimensional variable, we used *U* Mann Whitney and Spearman's correlation. A multiple regression analysis was performed to determine which dysfunctional patterns of personality were associated with the risk of suicide. The results are expressed as absolute numbers, percentages, as well as the mean and standard deviations. A statistical significance of 0.05 was used to compare hypotheses. Data processing and analysis were performed using the SPSS statistical program version 21.0 for Windows (IBM Corp., Armonk, NY, USA).

3. Results

3.1. Dysfunctional Patterns of Personality

Taking into account that we adopted the most conservative criteria of Millon's scoring for describing the presence of PD (scores equal or greater than 85), the presence of any PD among the sample was 29.4%. Describing the occurrence according to each PD, those PD with higher frequency were compulsive (7.1%) and narcissistic (7.1%), followed by antisocial (4.6%) and sadistic (3.1%). Twenty-four percent of the patients reported a presence of one PD and only 1.5% two PD. On the other hand, avoidant, dependent and masochistic were not present as a disorder.

The first objective of the study was determine which PDs (scoring equal or greater than 85) are more frequent among those patients with a risk of suicide and which PDs are more frequent among those without a risk of suicide. Bearing in mind that the number of PDs was small, we performed a non-parametric statistical test. The results of relationship between PDs as categorical variables and the risk of suicide are set out in Table 1, in which the Fischer Exact test was carried out. What stands out in the first table is that, in the risk of suicide group, there is a higher presence of schizoid, depressive, narcissistic, antisocial, sadistic, schizotypal, borderline and paranoid cases, although the differences between the groups are not statistically significant in any case. The histrionic and compulsive disorders are more present, in a significant way, in the no risk of suicide group. If we compare the direct scores of the different scales of PDs, significant differences are shown in the scores of all scales except in narcissistic through the *U* Mann Whitney analysis (Table 2). Furthermore, those patients grouped in the risk of suicide presented a higher mean than those without risk, not including histrionic, narcissistic, compulsive and borderline.

Table 1. Relationship between personality disorders (PDs) and risk of suicide.

Personality Disorder	Presence/Absence of Disorder	Presence of Disorder (*n*, (%))	No Risk of Suicide	Risk of Suicide	*p*
Schizoid	no disorder disorder	2 (1)	76 (100) 0	118 (98.3) 2 (1.7)	0.523
Avoidant	no disorder disorder	0	76 (100) -	120 (100) -	-
Depressive	no disorder disorder	1 (0.5)	76 (100) 0	119 (99.2) 1 (0.8)	1.000
Dependent	no disorder disorder	0	76 (100) -	120 (100) -	-
Histrionic	no disorder disorder	3 (1.5)	73 (96.1) 3 (3.9)	120 (100) 0	0.057
Narcissistic	no disorder disorder	14 (7.1)	70 (92.1) 6 (7.9)	112 (93.3) 8 (6.7)	0.781
Antisocial	no disorder disorder	9 (4.6)	74 (97.4) 2 (2.6)	113 (94.2) 7 (5.8)	0.487
Sadistic	no disorder disorder	6 (3.1)	76 (100) 0	114 (95) 6 (5)	0.084
Compulsive	no disorder disorder	14 (7.1)	67 (88.2) 9 (11.8)	115 (95.8) 5 (4.2)	0.050
Negativist	no disorder disorder	2 (1)	76 (100) 0	118 (98.3) 2 (1.7)	0.523
Masochistic	no disorder disorder	0	76 (100) -	120 (100) -	-
Schizotypal	no disorder disorder	1 (0.5)	76 (100) 0	119 (99.2) 1 (0.8)	1.000
Borderline	no disorder disorder	2 (1)	76 (100) 0	118 (98.3) 2 (1.7)	0.523
Paranoid	no disorder disorder	4 (2)	75 (98.7) 1 (1.3)	117 (97.5) 3 (2.5)	1.000

Table 2. Mann–Whitney *U* test of PD symptoms related to presence of risk of suicide (M (SD)).

MCMI-III Scales	No Risk	Risk of Suicide	*U*	*Z*
Schizoid	7.07 (3.68)	10.88 (4.73)	<0.001	−5.448
Avoidant	6.58 (4.47)	9.73 (5.64)	<0.001	−3.677
Depressive	5.87 (4.84)	12.21 (5.59)	<0.001	−7.051
Dependent	7.57 (4.73)	10.07 (4.91)	0.001	−3.237
Histrionic	15.03 (4.14)	12.34 (5.10)	<0.001	−3.610
Narcissistic	14.72 (4.06)	14.17 (4.65)	0.410	−0.824
Antisocial	9.93 (5.23)	12.94 (5.14)	<0.001	−3.783
Sadistic	9.46 (5.13)	13.30 (5.36)	<0.001	−4.710
Compulsive	17.04 (4.26)	14.97 (4.48)	0.002	−3.157
Negativist	8.67 (4.84)	13.36 (5.79)	<0.001	−5.487
Masochistic	3.71 (3.44)	8.12 (4.55)	<0.001	−6.486
Schizotypal	4.84 (4.67)	9.44 (5.86)	<0.001	−5.586
Borderline	5.87 (12.43)	3.94 (5.46)	<0.001	−7.768
Paranoid	8.2 (5.64)	11.30 (6.26)	0.001	−3.382

3.2. Analysis of the Relationship between Symptomatology of PDs and Risk of Suicide

In addition, the relationship between the risk of suicide and symptomatology of PDs was investigated using Spearman's correlation coefficient (Table 3). The different scores of PDs showed a significant association with the risk of suicide, with the exception of the narcissistic. The three higher and stronger correlations were borderline (r = 0.703), depressive (r = 0.628) and masochistic (r = 0.529). Otherwise, results indicated an inverse correlation between the risk of suicide and histrionic, narcissistic and compulsive scales, even though the narcissistic scale did not have any statistical correlation.

Table 3. Relationship between symptomatology of PD and risk of suicide through the Spearman' correlation.

MCMI-III Scales	Spearman's Correlation	*p*
Schizoid	0.492 *	<0.001
Avoidant	0.334 *	<0.001
Depressive	0.628 *	<0.001
Dependent	0.354 *	<0.001
Histrionic	−0.324 *	<0.001
Narcissistic	−0.072	0.314
Antisocial	0.347 *	<0.001
Sadistic	0.417 *	<0.001
Compulsive	−0.310 *	<0.001
Negativist	0.493 *	<0.001
Masochistic	0.529 *	<0.001
Schizotypal	0.523 *	<0.001
Borderline	0.703 *	<0.001
Paranoid	0.320 *	<0.001

* Correlation is significant in the level 0.01.

3.3. Predictive Characteristics of Risk of Suicide

Another main objective of the study was to determine which PDs were associated with the risk of suicide. Thus, in order to describe this, a multiple regression, in which scores of the risk of suicide, as dimensional variables, were the dependent variable, was performed while sociodemographic, suicide-related characteristics (age, gender, education, marital status and patient's suicide attempt) and dysfunctional patterns of personality were considered independent variables. The results were presented in Table 4. Those dysfunctional patterns of personality defined also as dimensional variables associated with the risk of suicide were avoidant, depressive, schizotypal and borderline.

Table 4. Multiple regression analysis of dysfunctional patterns of personality associated with risk of suicide.

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	95% Confidence Interval for B	
	B	Standard Error	Beta			Lower Bound	Upper Bound
Constant	6.289	2.100		2.995	0.003	2.144	10.433
Age	0.004	0.017	0.013	0.263	0.793	−0.029	0.037
Gender	0.239	0.366	0.029	0.653	0.515	−0.483	0.961
Education	0.441	0.338	0.060	1.304	0.194	−0.227	1.108
Marital status							
Single	0.125	0.404	0.015	0.310	0.757	−0.672	0.922
Separated	1.235	0.353	0.171	3.498	0.001	0.538	1.931
Widow	2.612	0.579	0.208	4.514	<0.001	1.470	3.754
Patient's suicide attempt	−2.162	0.353	−0.299	−6.116	<0.001	−2.860	−1.464
Schizoid	0.077	0.055	0.108	1.421	0.157	−0.030	0.185
Avoidant	−0.118	0.054	−0.189	−2.200	0.029	−0.223	−0.012
Depressive	0.135	0.045	0.243	3.033	0.003	0.047	0.223
Dependent	−0.021	0.043	−0.030	−0.477	0.634	−0.106	0.065
Histrionic	−0.049	0.057	−0.071	−0.856	0.393	−0.162	0.064
Narcissistic	−0.031	0.048	−0.041	−0.657	0.512	−0.126	0.063
Antisocial	−0.042	0.051	−0.067	−0.823	0.412	−0.143	0.059
Sadistic	0.030	0.049	0.050	0.616	0.539	−0.066	0.127
Compulsive	−0.024	0.047	−0.032	−0.519	0.604	−0.117	0.068
Negativist	0.032	0.049	0.056	0.658	0.511	−0.065	0.130
Masochistic	0.046	0.059	0.063	0.781	0.436	−0.070	0.162
Schizotypal	0.104	0.049	0.179	2.101	0.037	0.006	0.202
Borderline	0.169	0.058	0.292	2.932	0.004	0.055	0.283
Paranoid	−0.050	0.043	−0.091	−1.170	0.244	−0.134	0.034

4. Discussion

Almost one third of our sample (29.4%) reported some PDs. Therefore, PDs are quite frequent among the current SUD sample, which is in agreement with those results obtained by previous studies [23–25]. Comorbid PD and SUD represent a robust determinant of elevated suicide risk [38]. However, the scales in which there are any cases with a score above 85 were avoidant, dependent and masochistic.

The primary goal of this study was to determine which dysfunctional patterns of personality are more frequent among those patients with a risk of suicide and which PDs are more frequent among those without a risk of suicide. There are very few patients who reported high scorings of PD in the sample. When we have dichotomized PD variables in "presence of PD" or "absence of PD", it can be seen that there are very few cases. The differences between the group of "risk of suicide" and "no risk of suicide" are not significant in the different PD, except for histrionic, sadistic and compulsive. However, it should be noted that more PDs were associated with the risk of suicide than without the risk of suicide. Histrionic and compulsive are more frequent in the no risk of suicide group, and sadistic in the risk of suicide group. For this reason and following the theoretical approach of early research [13,15,16], we wanted to analyze more thoroughly the different PD scales in a dimensional way. Consistent with our expectations, reporting a high scoring in PDs' scales is linked with the risk of suicide, except in the cases of the histrionic, narcissistic and compulsive scales, although histrionic and compulsive are the only scales in which the differences are statistically significant. Specifically, when analyzing how PDs scoring and the risk of suicide perform, borderline, depressive and masochistic are the three scales with a higher association with risk of suicide. These results confirm the important role of PDs as risk factors for suicide as other studies suggested [39,40].

An important finding was that the narcissistic, compulsive and histrionic scales had an inverse correlation with the risk of suicide. A potential explanation for these findings might be that stating personality traits of these scales could be defined as protective factors against suicidal risk. Nowadays,

some personality characteristics from those PDs are greatly accepted and promoted in Western society [41]. These results lead us to reflect on previous investigations carried out with the MCMI [37], in which a curved model of the narcissistic, histrionic and compulsive scales is considered, meaning that it is the low and the high scores that indicate non-adaptation, whereas intermediate levels on these scales would reflect adaptive patterns, unlike what happens in relation to other scales [41]. Turning next to the narcissistic scale, it was the only PD with no present relationship with the risk of suicide. This finding indicates that the narcissistic PD appears to be a distinct group among cluster B personality disorders related to suicidal risk but this outcome is contrary to that of Pompili and his collaborators [3], who found that individuals with cluster B personality disorders have a greater risk of dying by suicide. At this point, it should be taken into account that presenting specific personality traits does not necessarily entail negative consequences in relation to the presence of mental health problems but reporting many personality traits could be associated to a general dysfunctional pattern of personality, so could be linked to risk of suicide. Therefore, it is important to be aware of differences between dimensional analysis (direct scoring) and categorical analysis (presence–absence of PD) in order to describe the specific characteristics that may be more protective for those who make up the PD. As some authors stated [42], each case has a profile that emerges from quantitative variations and different levels ranging from normal to pathology without the need to cut-off that could be artificial.

In order to identify which PDs were linked to the risk of suicide, a multiple regression analysis was conducted. Talking about the sociodemographic variables related to the risk of suicide, marital status was the only relevant characteristic. Being separated or divorced and widowed was statistically significant with the risk of suicide. These results are in accord with previous studies [43]. The current study also found that reporting a previous suicide attempt was associated with the risk of suicide, which was consistent with several examples of previous research [44]. In fact, reporting a previous suicide attempt and being separated or being widow were the variables with a major contribution to risk of suicide according to the Table 4.

The regression analysis revealed that the presence of avoidant, borderline, schizotypal and depressive are all associated with the risk of suicide. These results are broadly consistent with previous research [3,45–48]. A diagnosis of borderline PD doubled the risk of suicide when compared to patients diagnosed with other types of PD [38]. Links and his collaborators [47] found that 25.6% of participants with borderline PD attempted suicide during the course of one year of treatment. Moreover, 60% to 70% of patients with borderline PD reported a history of suicidal behavior [49]. These relationships may partly be explained by the role of impulsivity as a key background factor [3].

PDs are relevant factors to take into account related to the risk of suicide among SUD patients. As a practical implication of the present findings, the results indicate that the identification of comorbidity of SUD is important for improving the treatment among the bereaved drug-dependent population as well as reducing suicidal ideation because, as Schneider et al. noted [40], treating PDs is essential for suicide prevention.

The current research presented some limitations that should be considered. It is important to mention that this study was performed using a convenience sample of bereaved substance users, who attended a drug addiction treatment center. Therefore, our sample might be different from the general drug user population. Furthermore, the current research had a cross-sectional design and we relied on self-reporting measures. Thus, we must be cautious due to the small number of PD cases according with the most conservative scoring of Millon [36]. Notwithstanding these limitations, this study provided significant data related to the specificity of the sample. Clarifying the pattern of risk across mental disorders is a necessary step to identify where resources can be most effectively targeted and interventions prioritized [50].

5. Conclusions

To date, there are no studies that have investigated the association between risk of suicide and dysfunctional patterns of personality among a bereaved SUD sample. As predicted, reporting PDs are linked with the risk of suicide, with the exception of the narcissistic scale. The presence of avoidant, depressive, schizotypal and borderline personality disorders are associated with the risk of suicide. In conclusion, these findings outline the importance of performing therapeutic interventions in order to focus on PD in those bereaved SUD patients and to reduce and prevent the risk of suicide.

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5. MAIN RESULTS and DISCUSSION

5. MAIN RESULTS AND DISCUSSION

In the following section a general discussion will be presented. The reader can understand each one of the papers and see more in detail of both results and discussion of the specific article. These issues will then be addressed globally.

The combination of findings of the current research provides support for the conceptual premise that CG symptomatology is highly frequent among SUD patients. The findings of this study highlight the association between an SUD diagnoses and symptoms of CG, so it is relevant to enhance our knowledge related to different constructs that could influence it. The complexity of the sample of the study should be considered because it was not made up of subclinical participants. It was a sample composed of patients with SUD diagnosis in treatment (it was a clinical sample so this involves different circumstances such as the difficulty to collect the data, patients with several associated medical, social and psychological problems).

In the next section, attention will firstly be paid to the main results related to each of the dissertation's aim, then the limitations of the current research will be addressed and the chapter will end with the future implications.

Bereavement variables

What is the frequency of CG symptoms in an SUD sample compared to the control group?

The 1st Aim was to determine if the presence of CG symptomatology is more frequent among SUD patients than a control group, to examine comparisons between the "normative" and "complicated" grievers with respect to demographic characteristics, variables related to drug dependency, bereavement-related experiences and perceived social support, as well as to describe which of these variables could be associated with the presence of complications in bereavement among participants.

The most important clinically relevant finding was that CG symptoms occurrence among SUD patients was 34.2%, whereas it was only 5% among the control group. As hypothesised CG symptomatology is far more common among SUD patients. The presence of CG symptomatology in this study was higher than that found in previous studies in non-SUD populations (Kersting et al., 2009; Simon et al., 2005) which show the high vulnerability of having complications in bereavement among subjects with an SUD diagnosis.

Following the scope of risk factors identified by bereavement research, the relationship with the deceased was a relevant factor. Surprisingly, our results indicate that SUD individuals who had lost one of their siblings have an increased risk of CG. A possible explanation for this situation might be that the sibling could be the figure who can establish a closer bond with SUD individuals, compared to other family members. In relation to circumstances of death, traumatic death was associated to a higher risk of CG symptomatology, which was mentioned in the literature review (Kristensen et al., 2012; Macias et al., 2004; Nakajima et al., 2012). Several sociodemographic factors were evaluated related to CG. A lower level of education was connected to CG symptomatology, which was in agreement with Onrust et al. (2006) and Newson et al. (2011). As Maccallum and Bryant (2010) pointed out, lower levels of cognitive functioning were detected among people with CG symptoms, which were attributed to CG interfering with information processing.

There were no differences between the main diagnosis of drug dependence and complications of grief. However, there was another variable related to SUD characteristics, serving time in prison, which was found to be associated with the presence of CG symptomatology. Although there is no clear hypothesis about the relationship between symptoms of CG and spending time in prison, this could be due to the accumulation of traumatic life situations. Taking prescribed pills was associated to CG symptoms, which may partly be explained by the psychiatric vulnerability related to SUD participants.

According to research on social support (Burke et al., 2010; van der Houwen et al., 2010), complicated grievers' scores on social support were much lower than normal grievers, which underlines the fact that social support plays an important role in adjustment to bereavement.

We concluded that CG symptomatology was likely to be related to the type of sample (presence of substance use disorder), education (primary), significant person who died (sibling), circumstances of death (traumatic circumstances), and social support perceived (low and moderate).

How does the ICG behave with people with SUD?

In the 2nd Aim the psychometric ***properties of the ICG instrument*** *were described, as well as the concurrent construct validity among bereaved drug dependent individuals with coping strategies, social support and clinical syndromes.*

Any instrument should be validated across the specific subpopulation because there could be potential differences to responses to different groups of patients (Roncero, 2015). We should bear this in mind and, because SUD patients may be vulnerable to symptoms associated with the brain's

reward system, it is relevant to examine the CG symptoms performance specifically among the SUD sample.

The Spanish version of ICG adapted to bereaved drug dependent users showed good psychometric properties. Internal consistency of the Spanish ICG was high. Cronbach's alpha was 0.922 and each item had a substantive correlation with the total. Even in the general population where three factors were found (Limonero et al., 2009), the current research indicated four factors which were conceptually consistent and this result substantiated the multidimensionality of symptoms of CG as Limonero et al. (2009) suggested.

The factor analysis defined four factors: "discomfort", "non-acceptance", "loneliness - isolation" and "presence of the deceased". The results supported the concurrent construct validity of the Spanish version of the ICG. In this way, social support, emotional expression and problem resolving capacities showed inverse associations between factors 1 and 2 and factors 3 and 4. One interesting finding was that the first factor was made up of an "emotional" component as well as a "cognitive" component which emphasized the emotional factors within the bereavement process as previous studies mentioned (Stroebe et al., 2013; Boelen et al., 2009).

The discriminant capacity of the ICG items was high (except for 12, 15 and 16 items). The squared canonical correlation for the social support and the coping strategies showed a full statistically significant model. The negative correlation between the total score of ICG and the Social Support scale shed light on the role of having social support to adapt better to the bereavement process, as several studies suggested (Burke et al., 2010; Villacieros et al., 2014). Related to the clinical syndromes and construct validity, MDD and PTSD were the disorders which reported high association with factors 1 and 3. It is interesting to note the significant correlation between the fourth factor and anxiety and post traumatic stress disorder.

In summary, our results provided information about the multidimensionality of CG symptomatology construct. Moreover, the Spanish version of the ICG performed well among our SUD sample. Furthermore, these four factors (discomfort, difficulties to accept the death, isolation and the presence of the deceased) are characteristic traits of CG symptomatology, as different studies suggested (Bonanno & Kaltman, 2001; Castenovo et al., 2015; Stroebe et al., 2010). As we hypothesised, the ICG can be used to identify difficulties among bereaved people with SUD considering that in this SUD population the instrument performed differently.

Is there any relationship between drug users' bereavement and substance consumption?

In the 3rd Aim we determined the ***relationship between the loss of a significant person and drug consumption*** *among bereaved people diagnosed with SUD in order to address this issue in treatment. The study aimed to outline the differences in bereavement, addiction, as well as sociodemographic variables, between individuals who first lost a significant one and afterwards increased drug consumption ("B-A"), and those individuals who started using drugs before experiencing the loss of a significant person ("A-B").*

Previous research has postulated a convergence between losing a significant person and drug consumption among substance users (Bammer &Weekes, 1994; Martin & Privette, 1989; Zuckoff et al., 2006). The most important finding was that 83.2% of all participants reported that after the loss they increased their substance consumption. It is interesting to note that more than a half of the "A-B" individuals informed a negative relation between loss and their own substance consumption, 45.2% stated that they increased consumption after the loss, and 12.3% suffered a relapse. These results underlined the vulnerability of the participants especially in the "A-B" group which was the larger group (74.9%). A relationship between life events and substance dependence clearly exists (Rugani et al., 2011) and according to Bowser et al. (2003) SUD people could present a variety of background traumas and these accumulated traumas could influence high risk behaviour.

This "A-B" group reported an earlier occurrence of the increase of drug consumption and higher symptomatology of CG than "B-A". 39% of the "A-B" group showed symptoms of CG, which means that almost four out of ten of those patients who were in treatment and experienced a significant death, revealed symptomatology of CG.

One unanticipated finding was that 54% of "B-A" participants did not perceive any relationship between loss and their own drug use. What is more, 8.9% of all participants reported being abstemious after the loss. More research would be needed in order to go into this particular phenomenon.

Related to the gender issue, the data suggested that more women were classified in the "B-A" group which indicates an earlier bereavement process as previous research established (Schepis et al., 2011; Tuchman, 2010).

This study sheds new light on the relationship between drug users' bereavement and their substance consumption. Contrary to our first hypothesis, losing a significant person was perceived as a risk

factor to increase drug consumption, especially among those participants who first increased drug consumption and after suffered the loss.

Psychopathology and symptoms of CG

What is the association between clinical syndromes and CG symptoms?

The 4th Aim was to assess the association between the presence of ***clinical syndromes*** *(Anxiety, MDD, PTSD) and CG symptoms among bereaved people with SUD.*

From our data, it can be seen that those participants with CG symptoms also reported a higher frequency of clinical syndromes, which has previously been observed by other studies, underlying the fact that those patients with co-occurring MDD, Anxiety or PTSD and SUD informed more severe psychopathology, greater health problems as well as noted functional impairments which contributes to a heightened vulnerability to relapse after discharge (Compton et al., 2003; Regier et al., 1990). That finding confirmed our initial hypothesis. Taking into account that we used the most conservative criteria with scores equal or greater than 85, more than a half of the individuals (53.7%) presented Anxiety disorder, almost two out of ten (17.9%) reported MDD and 9% PTSD. These results were in the same line as other studies (Piper et al., 2001; Simon et al., 2007), which were focused on psychiatric samples and, the current research was based specifically on people with SUD.

CG symptomatology was associated with the female gender, being separated or divorced and having lost a sibling. In general studies in relation to gender (Lobb et al., 2010; Lombardo et al., 2012), women were found to carry a greater risk of developing CG symptoms than men, the same results as the ones that we have found in our study. With respect to the clinical syndromes, symptoms of CG were linked with MDD and PTSD disorder. These two clinical syndromes were both highly related with the construct of CG symptoms which were in the same line as other studies (Brady & Sinha 2005; McCautley et al., 2012; Sun et al., 2011). Despite overlapping in the CG symptoms criteria and Anxiety, MDD and PTSD reactions following bereavement, the phenomenological distinctiveness of symptomatology of CG (such as yearning, searching disbelief), from those of bereaved-related Anxiety, MDD and PTSD was found in several studies in the general population (Golden & Dalgleish, 2010; Ogrodniczuk et al., 2003). According to these results, CG symptoms reported incremental validity in predicting physical problems after controlling for the effects of MDD, Anxiety and PTSD following the bereavement (Golden & Dalgleish, 2010).

What are the PDs that are most associated with CG symptoms?

The 5th Aim was reporting a study on ***personality disorders*** *based on the network analysis.*

Most of the PDs were highly inter-correlated. These relationships were particularly notable for Schizotypal, Borderline, Avoidant and Negativistic PDs, which presented greater level of centrality. Of all the PDs, Schizotypal, Depressive, Borderline and Paranoid are those PD which reported a stronger association with the rest of PDs ($p<0.001$, $\rho>0.4$). These results further support the idea of Millon's theory which Schizotypal and Borderline disorders represent an advanced and complex state of the pathology of personality (Millon, 1997).

The present findings contribute to a modest literature on bereavement and personality disorder. Although several studies have examined PDs among SUD samples (Agrawal, Narayanan, & Oltmanns, 2013; Goldstein et al., 2012), almost no research has examined the role of PDs in bereavement, as different studies have indicated (Bonanno, 1999; Gana & K'Delant, 2011).

CG symptoms correlated positively with 9 PDs. The CG construct showed strong correlation with Depressive, Schizotypal, Self-destruct, Borderline and Paranoid PDs. Moreover, some neuroticism personality traits that reflect difficulties in emotional regulation are prone to CG symptoms (Prigerson et al., 1997). Other personality traits involving hostility towards others have also been connected with complications in bereavement (Mulder et al., 1999). The findings of the current research support the notion that some personality characteristics are potential risk factors in bereavement (Meuser & Marwit, 1999-2000). Our results expands on previous findings that Compulsive, Histrionic and Narcissistic PDs are not linked to CG (Tomerken et al., 2011).

Bearing in mind the sociodemographic characteristics, it would be useful to be able to understand the specific interplay of the different variables in the patient personal situation and to design even more effective and personalized treatments (Fried et al., 2017) for each specific personal situation.

Risk of suicide and bereavement

What are the variables that allow us to distinguish people with suicide risk in a bereaved SUD sample?

The 6th Aim was to describe the presence of ***suicide risk*** *and other key variables in abstemious drug dependent people who have experienced the loss of a significant person. Therefore, we must distinguish between those individuals without risk of suicide and those with risk of suicide.*

The results of our data showed that 61.2% of participants stated a risk of suicide. This result confirmed the high prevalence of risk of suicide in this specific population group according to several studies which all emphasise the vulnerability of SUD people (Bernal et al., 2007; Giner et al., 2014; Feigelman et al., 2011). Moreover, the presence of patients' suicide attempt was 32.1%, which was highly associated with the risk of suicide. An association which confirms prior research in the field of suicide (Giner et al., 2014; Lejoyeux et al., 2008; Modesto-Lowe et al., 2006). In line with other studies (Bailey et al., 2011; Pompili et al., 2010) reporting a family history of suicide attempts was critical to a risk of suicide since past history of suicide attempts is the best predictor for future attempts (Hawton & van Heeringen, 2009).

Our results related to sociodemographic variables are in agreement with those obtained by previous studies: separated or widowed people were associated with suicide risk (Masocco et al., 2010; Wyder et al., 2009), unemployment was a risk factor in suicide (Hawton & van Heeringen, 2009; Sher, 2006a), low social support is related to greater risk of suicide (Pompili et al., 2010; Wong et al., 2008) and serving time in prison was related to a greater risk of suicide, in the same concurrence with the results of Shaw et al. (2004) and Fruhwald et al. (2002).

With regard to the bereavement variables, one notable finding was that reporting symptoms of CG was statistically associated with the risk of suicide, which was consistent with the findings of Latham and Prigerson (2004) and Mitchell, Kim, Prigerson and Mortimer (2005) and corroborated the hypothesis of this study.

What are the PDs that are related to the suicide risk in a bereaved SUD sample?

The 7th Aim was to explain which PDs were more frequent among those patients with a risk of suicide and which PDs are more frequent among those without a risk of suicide

Bearing in mind that nearly 90% of all suicides are associated with a diagnosable mental health or SUD (American Foundation for Suicide Prevention, 2011) and because the relationship between PD and symptoms of CG was described in a previous article, in the seventh paper we focused on the possible association between PD and the risk of suicide. Moreover, both variables were significant in relation to CG symptomatology.

Almost one third of our sample (29.4%) reported some PDs. Comorbid PD and SUD depict a robust determinant of elevated suicide risk (Doyle et al., 2016). Consistent with our expectations, reporting a high scoring in PD scales is linked with the risk of suicide, except in the cases of the Histrionic, Narcissistic and Compulsive scales, although histrionic and compulsive were the only scales in which

the differences were statistically significant. Specifically, when analyzing how PD scoring and the risk of suicide perform, Borderline, Depressive and Masochistic were the three scales with a higher association with risk of suicide.

An important finding was that the Narcissistic, Compulsive and Histrionic scales had an inverse correlation with the risk of suicide. It seems possible that the personality traits of these scales were due to being defined as protective factors against suicidal risk. These results led us to reflect on previous research performed using the MCMI (Millon, Davis, & Millon, 1997), in which a curved model of the Narcissistic, Histrionic and Compulsive scales were considered, meaning that it was the low and the high scores that indicate non-adaptation, whereas intermediate levels on these scales would reflect adaptive patterns, unlike what happened in relation to other scales (Caparrós & Villar, 2013).

The regression analysis described that the presence of Avoidant, Borderline, Schizotypal and Depressive were all associated with the risk of suicide. These results were broadly consistent with previous research (Links et al., 2013; Zeng et al., 2015).

A key strength of the present study was that PDs are relevant factors to take into account in relation to the risk of suicide among SUD patients. The findings indicated that the identification of comorbidity of SUD is important for improving the treatment among the bereaved drug-dependent population as well as reducing suicidal ideation because, as Schneider et al. noted (2008), treating PDs is indispensable for suicide prevention.

GENERAL DISCUSSION

The present study provides more specific knowledge and understanding of the relationship between SUD, symptoms of CG and involved variables. This work has substantial and clear implications for clinical practice and will inform the improvement of interventions by allowing the specific needs of SUD patients to be netter targeted, in line with the current tendency in personalized interventions in the field of health

6. LIMITATIONS

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Some limitations should be taken into account when interpreting the results.

First, the present research has a cross-sectional design, consequently causal inferences cannot be made.

It is important to point out that this study was carried out using a convenience sample of substance users who attended an Addiction Treatment Centre, and our participants could be different from the general drug user population. Therefore, a random SUD sampling was not made. So caution in generalizing from data must be observed.

Continuing with the sample design, we are aware of the restrictions of our "control" group sample as the level of education is higher than a sample from the general population. Apart from that, the bias of this group was related to the selection process since participants of the control group were collected from social clubs and community-related organisations. So, generalization cannot be made. However, we want to underline that our purpose was to study an SUD sample rather than comparisons with the general population and bearing in mind the specificity of SUD people related to social characteristics.

A further limitation associated with the particularity of the sample was the difficulty to ensure abstinence of secondary drug consumption such as tobacco.

The next limitation was associated with subjective measurement because we used self-report measures. The onset age of increased drug consumption as well as the age when the participant lost the significant person was based on retrospective recall. Even though this methodology proposes insight into a key time period and serves to better understand the broader context as different authors (Carter-Harris, 2015; Howard, 2011) stated, we are aware of the implicit limitation because it was subordinated to recall biases or errors which could taint accuracy and completeness of the collected data.

The last identified limitation is related to the tool used for the clinical syndromes and PDs. It would have been interesting if clinical syndromes were assessed with specific psychometric testing or diagnostic interviews for psychopathology.

7. FUTURE IMPLICATIONS

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Different implications can be drawn from the research reported in this dissertation. Our findings showed a high frequency of CG symptomatology among a bereaved SUD sample. Taking into account this relevant finding, it would be essential to underline knowledge about symptoms of CG and psychopathology among SUD.

There is little knowledge about CG symptomatology among the drug addicted population, therefore it is an ***underestimated phenomenon.*** Consequently, it is easy to minimize the traumatic experience of the SUD person. When I started the current study, I remember hearing the comment from some colleagues: "Trying to assess CG symptomatology is like when people cry and you consider they could have Depression, because everybody has experienced the loss a significant person". Obviously we should not fall into the trap of psycopathologizing everyday life, but, on the other hand, we cannot underestimate the pain of SUD patients whose suffering can become pathological in some cases. It should be important to design educational programs related to CG symptomatology for those professionals who work in the addiction field. Linked to this reality, we should remember that the instrument ICG focuses on chronic grief but there are ***other forms of bereavement***. In fact, bereavement is a universal reality, so it is a natural process. However, when this reality becomes maladaptive, effort from the scientific community is required to investigate this phenomenon in order to provide effective psychological interventions. The fact that the complications in bereavement in DSM 5 is an appendix (Persistent Bereavement Complex Disorder) demonstrates the novel field and the need to continue expanding knowledge.

Moreover, recent research (Yoo et al., 2017) showed that alcohol does not help to forget (though this drug is often considered a "facilitator" for the avoidance of problems), but on the contrary, alcohol perpetuates the feeling of fear. In the same line, it is highly important to consider one SUD characteristic, being ***denial***. It is an implicit trait of addiction and it can be defined as a defence mechanism which manifests itself in the form of evading reality and difficulty in frustration management. In this sense, negation has implications, such as difficulty in assessing the symptoms of CG. I remembered exploring the death of any significant people with one particular SUD patient and at the beginning she totally denied the fact. After a long talk, she admitted her father died by suicide and her brother died from cancer, as well as her mother dying some years ago. Another case of a patient who did not join the research: he reported consuming a large amount of alcohol during the

first weekend of April. During the psychological intervention, he admitted that two years ago he had consumed a great quantity of alcohol in the same period. I asked if in the past this had ever happened, or even if he had experienced some important life event. First of all he could not recall but after some time, he realised it had been when his grandmother died fifteen years before. Likewise, it would be interesting ***qualitative research*** for more information.

At a therapeutic level, it would be appropriate to consider whether the patients have experienced the loss of a significant person in their life and how the factors could affect them. Moreover, most individuals with undiagnosed CG would be relieved to know that their symptoms are indicative of an identifiable syndrome and then they could be interested in receiving treatment for grief (Johnsom et al., 2009). It would be pertinent to take into account the importance of including the process of grief psychotherapy when it is needed within the treatment of drug dishabituation, specifically for those cases in which symptoms of CG were present. Several authors have indeed noted the need for ***grief psychotherapy*** (Bonanno et al., 2002; Gielen et al., 2012; Mancini & Bonanno, 2009; Marques et al., 2013) in addiction treatment for those patients with CG symptomatology, as loss appears to be an "obstructive" factor to abstinence, and also the need for adaptative coping strategies and tools for recovery.

Comorbidity is in itself of a greater complexity and involves several implications. Apart from this, the comorbidities imply challenges that lie ahead for patients and clinicians alike (Ruglass et al., 2014). It is highly valuable to have clear correlations between specific comorbid psychiatric disorders and SUD disorders in order to appropriately treat patients (Compton et al., 2003). At the assessment level (not only in the therapeutic level), it could be useful to be aware of the differential patterns between those patients with CG symptoms and those without. Moreover, finding clear correlations of specific comorbid psychiatric disorders for those in substance use treatment would have important implications for predicting treatment outcomes (Compton et al., 2003; Zuckoff et al., 2006).

Keeping in mind the findings related to ***gender*** of the present study, this construct should be included as a relevant variable in future research. We consider that it is necessary to be especially attentive to women who have had a significant personal loss, present psychopathological vulnerability and consume some substance such as alcohol, as they have a greater risk of complications in the abuse of substances. In this regard, it would be necessary to design protocols for intervention by health professionals (e.g. Primary Health Center).

Another issue that surprised me is the ***terminology***. Some of the reviewers' comments differentiated alcohol and drugs. They consider "drugs" as illegal substances, cocaine or heroin, but they do not

include alcohol in the concept, even though alcohol is the most consumed drug. At this point, it could be interesting to do more research according to substances and study the possible differences between them. On the other hand, intervention at the community level is important to raise awareness that alcohol is a drug as well as the inclusion of alcohol in drug prevention campaigns in both the mass media.

Some professionals felt that it was obvious that there can be complications in bereavement, arguing high ***scientific literature*** in this field, when really this is not so. It should be interesting to exploring this field with ***other research methodologies,*** such as network analysis. This approach is a new psychological research field, so more research based on this method is needed. It represents a vision model of psychopathology focused on the transdiagnostic. In this regard, we should continue carrying out research based on network analysis focusing on symptomatology. Collecting more data could enhance rigorous and accurate treatment in terms of assessment, diagnosis, and intervention, as well as relapse prevention. Apart from this, it should be interesting to collaborate with other fields of research, such as mathematics, medicine, as well as anthropology and sociology, in order to build more complete and wider knowledge.

A fundamental issue that appeared as a consequence of this dissertation was the clear association between CG symptoms and risk of suicide. Therefore, preventive programs for ***risk of suicide*** must include treatment of CG symptoms.

8. CONCLUSIONS

8. CONCLUSIONS

In this last section we specified the most significant conclusions of this doctoral dissertation. The findings of the present research enhanced our understanding of the relationship between complications in bereavement, psychopathology, other important variables and SUD diagnosis.

Bereavement variables

- The most interesting finding was the high frequency of CG symptoms (34.2%) among the bereaved SUD sample in comparison with the only 5% from the general population (control group).

- The substantial factors associated with symptomatology of CG were: loss of a sibling, traumatic death reported, time in prison and lower level of stated social support.

- The ICG instrument performed well among the SUD sample. The four factors which were found in the research confirm the multidimensionality of CG symptoms.

- Surprisingly, more than a half (54%) of the "B-A" participants did not admit any association between the death of a significant person and their own consumption.

- Another relevant outcome was that 83.2% of all participants of the current study reported increasing drug consumption after the death of a significant person. That finding corroborated the clear relation between life events and SUD

Psychopathology and symptoms of CG

- Participants with CG symptoms reported higher frequency of Anxiety (53.7%), MDD (17.9%) and PTSD (9%). MDD and PTSD are highly related with symptomatology of CG.

- CG was associated with Schizotypal, Dpressive, Borderline and Paranoid PDs ($p<0.001$, $\rho>0.4$).

Risk of suicide and bereavement

- It was remarkable to note that 61.2% of participants reported risk of suicide and 32.1% suicide attempts. Being separated or divorced, widowed, unemployed, informing of low social support, serving time in prison and reporting symptoms of CG were those variables associated with risk of suicide.

- Interestingly, 29.4% of participant reported some PDs. Even though we should consider the small sample size of PD, we could still obtain valuable information for clinical practice. Reporting high scoring in PD scales is linked with the risk of suicide except in Histrionic, Narcissist and Compulsive which show an inverse correlation. Avoidant, Borderline, Schizotypal and Depressive were associated with the risk of suicide.

We have taken into account gender as a sociodemographic variable but during the process of the research the differentiation between men and women has emerged as playing an important role. For example, in the "B-A" group, there were more females, and related to the clinical syndromes, symptoms of CG were associated with female gender.

GENERAL CONCLUSION

The present research extends our knowledge about symptoms of CG, SUD and several variables involved (clinical syndromes, PDs and risk of suicide). These findings have significant clinical implications for the understanding of how the two constructs (bereavement and SUD) influence each other.

Taking into account the different published papers presented in this dissertation, it is decisive to design intervention programs which treat symptomatology of CG and include this in the treatment for those SUD patients who have specifically reported complications in bereavement. Besides this, we must conceive and develop training programs for professionals working in the addiction sector.

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10. ANNEX

Annex 1. Quantitative and Qualitative studies about the relationship between bereavement and addiction

Table 1.

Quantitative studies about the relationship between bereavement and addiction

Authors (Date) Country	Type	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Bell&Keeley (2006). U.S.A	SLE	Compare patients from detox unit to participants in epidemiologic survey with: a) number and kinds of SLE, b) nature and extent of higher psychiatric disorders and c) hypothesized etiology of higher psychiatric scores from the number of SLE by two groups	N=122 patients of detoxification unit N=2029 households in a 3-country area (control group)	HOS/ SLEI 215 item schedule designed	Yes, the number of SLE were directly tied with high psychiatric disorders scores Detoxification patients reported elevated psychiatric disorder scores
Birtchnell. (1972). UK.	B	Examine the prevalence of parental death	N= 6795 patients aged 20 or over N=3425 of control group	The psychiatric sample was interviewed and the control group answered a post survey	Yes, relationship between early parental death and alcoholism was found only in female patients. The diagnosis most significantly associated with early bereavement was among the depressives and the alcoholics.
Blankfield (1982-83). Australia	SLE	Assess the different ways in which loss effected patterns of alcohol consumption	N=50 alcoholic patients (aged from 19 to 61 years)	MAST	Yes, loss can affect the pattern of alcohol consumption. The onset of alcoholism after loss could perhaps reflect a precipitant factor which unmasks the predisposition in a stable phase of the individual concerned.
Blankfield (1989)	B	Examine the patterns of establishment of alcohol dependence in widows	N=37 widows who had not remarried. N= 85 non-widows	MAST	Yes, the older woman with no family history or the woman with an alcoholic spouse have a higher risk factor.
Bowser, Word, Stanton & Coleman (2003). U.S.A	B	Ascertain the relationship among intravenous drug users between high levels of HIV risk-taking and both a) death of significant others experienced before age 15 and b) unresolved mourning	N=592 participants (out-of-treatment intravenous drug users) (71,4%male) (Aged from 19 to 67) Primary losses= before 15 years	CFBQ/ CIDUS	Yes, relationship between death and addiction was shown. Unexpected deaths experienced early in life and inadequate mourning as factors in progressively higher adult HIV risk-taking. 26.4% experienced one or more sudden deaths of adult family members before age 15. Significant relationship between those who under-mourned and being sexually abused as children. The earlier deaths respondents experienced, the higher was their sex trading. Those with incomplete mourning had the highest level of heroin and cocaine injection
Dennehy (1966). London	B	Determine the incidence of bereavement, that is, loss of a parent by death, in a psychiatric population	N=1020 patients from 3 psychiatric hospitals (433 men and 587 women) diagnosed as depressive, schizophrenic, other, alcoholic and drug addicted	Interview	Yes, significant incidence of parental death and addictions were found. There was a significant incidence of death of mother under fifteen, but no significant loss at a particular age was seen. Male alcoholics also showed an excess of loss of father between the ages of10-15. Among the drug addicted, there was significant excess of loss of both parents of female drug user before the age of 5

Note. HOS = Health Opinion Survey// SLEI = Stressful Life Event Inventory// CIDUS= Collaborative Intravenous Drug Users Study questionnaire// CFBQ= The Coleman Family Background Questionnaire // MAST= Michigan Alcoholism Screening Test // PISA= Psychiatric Initial Screening for Affective disorders

Authors (Date) Country	Type	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Evren et al. (2012). Turkey	SLE	Verify if heroin patients used less adaptive defense mechanisms and evaluate if immature defense style are related with childhood trauma	N=109 male patients N=60 control		Yes, heroin dependent inpatients used immature defense mechanism, which are related with childhood trauma experience
Furr et al. (2015)	B&SLE	Examine the self-reported losses experienced throughout life in individuals currently receiving treatment for SUDs.	N= 68 addicted patients divided into: adult residential program (n=14); substance abuse comprehensive outpatient (n=6); substance abuse intensive outpatients (n=34) and aftercare (n=14)	Experience of Loss in Addictions Inventory	Yes, loss was an issue that may appear during any phase of addiction counseling but authors are prudent and avoid establishing causal relationship
Furukawa et al. (1998). Japan.	SLE	Examine the relationship between early parental loss and subsequent development of alcohol dependence among Japanese men.	N= 75 men with alcohol dependence in treatment N= 52 healthy controls without any lifetime psychiatric disorder	PISA	No relationship between childhood parental loss and alcohol dependence was found. When stratified for sex and age, there was no statistically significant difference between the patients and the controls in the rates of maternal or paternal death or separation before the age of 16 years.
Gregory (1958). U.K.	SLE	Discuss systematically various difficulties that have been encountered in estimating the frequency of parental deprivation and also to distinguish between reasonable probability and speculation concerning data hitherto recorded.	Psychiatric patients	Review	Yes, considerable evidence indicates a high frequency of both parental death and separation during the childhood of individuals who subsequently manifest delinquent, antisocial or psychopathic behaviour.
Hamdam et al (2003). U.S.A.	B	Examine whether the incidence of alcohol and substance abuse is higher in parentally bereaved youth and, if so, what might explain this increased incidence.	N= 235 youth participants whose parents died of suicide, accident or sudden natural death N=178 demographically similar nonbereaved youth	Longitudinal population-based study. Validated scales covering psychopathology, self-esteem, social support and ways of coping.	No, the relationship between parental bereavement and pathological youth alcohol and substance use was not statistically significant. However, bereaved youth had an increased incidence at an earlier time to onset of SUD relative to nonbereaved controls. Bereaved youth were at a greater risk of SUD than their nonbereaved counterparts.

Note. PVS= Partner Violence Screen // PISA = Psychiatric Initial Screening for Affective disorders.

Authors (Date) Country	Type	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Hien&Scheier. (1995). U.S.A	SLE	Determine the association between trauma history and detoxification treatment outcomes.	N= 101 randomly selected women patients in detoxification treatment	A structured self-reported questionnaire to obtain sociodemographic variables, Drug History/ Trauma-Life History/ Self-Rating detoxication Experience.	No, no significant relationships were found between outcome and histories of trauma.
Hilgard&Newman (1963). U.S.A.	B	Determine the prevalence of parental loss by death in childhood among schizophrenic and alcoholic patients compared with a non-patient community sample	N= 1561 schizophrenic patients (631 males and 930 females) and N= 929 patients (678 males and 251 females); N= 1096 (478 males and 618 females) for control group All participants aged between 20-40 years	Control survey Alcoholics admission records	Yes, results established certain relationships between parental loss in childhood and the development of mental illness in adult life. Statistically significant difference in the incidence of death of both parents between young male alcoholics (aged 20-29) and the controls but no significant difference in the rate of death of either father or mother between older alcoholics and the controls
Hope, Power&Rodgers (1998). London	SLE	Investigate the association between parental separation and alcohol consumption in early adulthood	N= 11407 participants at age 33 years. Analyses are based on 4606 men and 4892 women with data at ages 23 and 33.	Longitudinal data from the 1958 British birth cohort study. CAGE	Yes-No, higher levels of alcohol consumption, heavy drinking were found for those who had experienced parental divorce in childhood, but not later parental divorce or parental death. At age 23, the relationship between parental separation and alcohol was weak but by the age 33 a stronger relationship had emerged.
Kaplow et al (2010). U.S.A.	B	Examine the potential differences in the presence of psychiatric symptoms between parentally bereaved children, children who experienced the death of another relative and nonbereaved children	N=172 parent-bereaved youth; N=815 youth who experienced the death of another relative ; N= 235 nonbereaved youth, aged 11 to 21 years.	C-GAS/ CAPA	Yes, a greater proportion of bereaved youth showed drug problems after the loss. SLE may lead to substance abuse through individuals' poor coping skills and vulnerability to depression. The impact of parental death on children must be considered in the context of pre-existing risk factors.
Kendler et al. (2002). U.S.A.	SLE	Examine the impact of parental loss due to death and separation on risk for Major Depressive Disorder (MDD) and alcohol dependence (AD).	N= 5070 twins participants from same-sex and 2118 participants from opposite-sex twin pairs ascertained from a population-based registry	Cox Proportional Hazard and Non-proportional Hazard models	Yes, relationship between parental loss and alcoholism was demonstrated. Consistent sex differences in the association with parental loss were seen for Alcohol Dependence but not Major Depressive Disorder. Parental separation was associated with a substantially increased risk for Alcohol Dependence in females but not in males. The loss in childhood of a parenting figure due to death does not appear to be pathogenic for Alcohol Dependence.
Kessler & Kendler. (1997). U.S.A.	SLE	Examine the relationship between adversities among childhood and psychiatric disorders	N= 8098 participants aged 15-54 years.	NCS/ FHRDC	Yes, the adversities were associated with onset, but not persistence, of addictive disorders.
Kestilä, et al. (2008). Finland	SLE	Explore the contribution of childhood and adult characteristics to heavy drinking in early adulthood.	N= 1234 adults participants aged 18-29 years	Frequency of drinking and different childhood circumstances.	Yes, a relationship between childhood adversities and heavy drinking in early adulthood were found among both genders. Low education was the highest risk group.

Note.C-GAS= Children's Global Assessment Scale // CAPA= Child and Adolescent Psychiatric Assessment// NCS= National Comorbidity Survey. // FHRDC= Family History Research Diagnostic Criteria// AUDIT=Alcohol Use Disorders Identification Test

Authors (Date) Country	Type	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Koss et al. (2003) U.S.A	SLE	Examine alcohol dependence and childhood maltreatment among several, geographically diverse, Native American communities	N=1660 individuals from seven Native American tribes	AUDADIS/ CTQ	Yes, some types of childhood exposures were significantly associated with alcohol dependence. Parental separation and early childhood adversity have a stronger impact than parental bereavement per se on alcohol dependence in youth.
Liang et al (2013). Denmark	SLE	Examine if prenatal maternal bereavement, as the indicator of prenatal stress, was associated with an increased risk of SUD in offspring	Population-based cohort study included all children born in Denmark (N=1686416) and Sweden (N=2563659) from 1973 to 1997.	Information obtained from the Danish Psychiatric Central Register and Danish National Hospital Register, Swedish Hospital Discharge Register	No, the role of prenatal stress following maternal bereavement has no link to SUD in later life. 2.45% of children were born to mothers who had experienced bereavement 1 year before or during pregnancy.
Murphy et al. (1979). U.S.A	SLE	Analyse if loss has a role in those alcohol dependent people who died by suicide	N=50 participants postmortem description	Interview the nearest available relative (the spouse of the victim mainly) in 2 phases.	Yes, loss as a predictor of suicide among alcoholics. 26% of alcoholics had experienced a loss of close interpersonal relationship within 6 weeks of their death and 50% for the entire year.
Oltman,et al (1962). U.S.A.	SLE	Examine if there is a relationship between parental deprivation and psychopathology	N=200 alcoholic patients and N= 230 controls (hospital employees)	Interview	No relationship between parental deprivations and alcoholism. The incidence of parental deprivations (including death or separation) was quite similar between these 2 groups
Pilling et al. (2012). Hungary	B	Analyze the relationship between bereavement and alcohol consumption accounting for time and gender differences on a national representative sample	N=466 participants (aged 18-75 years) who had lost a close relative in the past 3 years	Slightly modified Hungarian version of AUDIT	Yes, a link between bereavement and alcohol problems was found. Among bereaved men, the risk of alcohol related problems tends to be higher (than non-alcohol). Alcohol consumption might play a mediator role
Risser et al. (1996). Austria	SLE	Describe family characteristics of drug-related deaths	N=51 (have experienced at least one drug overdose and 53% of them had contact with therapeutic institutions)	Interviews with relatives of deceased drug users	Yes, there was a relation between SLE and drug abuse. 80% of drug users were reported to have experienced a traumatic event (parents' divorce or the death of a parent) during their childhood). The Mean age at death was 24.6 years. Those who experienced a traumatic event during their childhood started to smoke earlier. Drug abuse may be an indication of dysfunction within the family system.
Rounsaville et al (1982)	SLE	Defines and tests a typology of addicts through assessment of 3 key events (traumatic childhood events; onset of regular delinquent activity and initiation of illicit drug use)	N=384 opiate addicted patients divided into 3 groups: a) childhood trauma; b) onset of regular delinquent activity and c) initiation illicit drug use.	SADS/RDC/CODAP ASI/MAST/SAS/MPI BDI/GAS Timeline form for assessment of sequential life history	Yes, SLEs during childhood were linked with psychopathology. The group whose drug use followed early childhood trauma was characterized as having the most severe psychopathology and the lowest indices of social strengths and probably represents the clients with the poorest prognosis in treatment.

Note. AUDADIS= Alcohol Use Disorders and Associated Disabilities Interview Schedule// CTQ= Childhood Trauma Questionnaire.SADS= Schedule for Affective Disorders and Schizophrenia // RDC= Research Diagnostic Criteria / CODAP= Client Oriented Data Acquisition Process // ASI= Addiction Severity Index / MAST / SAS=Social Adjustment Scale/ MPI= Maudsley Personality Inventory / GAS= Global Assessment Scale// CIDI= Composite International Diagnostic Interview // MOS-SF-36= Medical Outcomes Study Form-36 // PBI= Paternal Bonding Instrument

Authors (Date) Country	Type*	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Rugani et al (2011). Italy	SLE	Assess the life events (loss and traumatic) before and after the dependence age of onset (DAO) and their responses to these events.	N=82 heroin-dependent patients in treatment (aged from 17 to 61 years)	DAH-RS/ TALS-SR	Yes, SLE and addiction was linked. Loss events and potentially traumatic events were present, and tend to increase, in passing from the before- to the after- DAO period. During the before-DAO period, "the death of a close friend or relative", "divorce" and "being neglected or abandoned' were rated by patients as the most important events. Exposure to SLE seems to strongly increase the risk of becoming drug-addicted.
Stikkelbroek. (2012). Netherlands	B	Examine association between parental death during childhood and adult psychopathology	N=7076 participants (aged from 18 to 64 years)	CIDI/ MOS-SF-36 Cross-sectional and prospective study	No, few indications that there was a significant increase in mental disorders in adulthood after the death of a parent during childhood. A small decrease was found in the lifetime prevalence of substance abuse for parentally bereaved compared to no parental bereavement. Parental death before the age of 16 was not associated with a younger age of onset of mental health problems.
Tennant & Bernardi. (1988). Australia	SLE	Examine if both narcotic users and alcoholics are more likely to have experienced the death of a parent or prolonged separation from one or both parents in childhood than a control group of non-addicts	N= 70 heroin dependent patients and N=40 alcohol dependent in treatment N=123 controls (patients and accompanying relatives)	MiniMental State Examination/ Zung Depression Inventory/ PBI	Yes, there was a relationship between loss and alcoholism, although it was not significant. More alcoholics and addicts reported maternal loss than controls (no statistical difference). Separations from both parents were significantly more common in both alcoholics and addicts than in controls. However, parental deaths were not associated with addiction
Wilkox et al (2010). U.S.A	B	Examine the risk of suicide, psychiatric hospitalization, and violent criminal convictions among offspring of parents who died from suicide, accidents, and other causes	N= 44,397 offspring of suicide decedents, N= 41,467 offspring of accident decedents, N= 417,365 offspring of parents who died by other causes, and N= 3,807,867 offspring of alive parents.	Population-based data from multiple Swedish national registers were linked from 1969 to 2004.	Yes, parental deaths were linked with addiction. Offspring of suicide decedents had an especially high risk of hospitalization for suicide attempt, depressive, psychotic, and personality disorders. Child survivors of parental suicide were at particularly high risk of hospitalization for drug disorders and psychosis. All offspring who experienced parental death, regardless of mode or age, were at increased risk of violent criminal convictions

*Type of article: B = Bereavement; SLE = Stressful Life Events.

Note. DAH-RS= Drug Addiction History Rating Scale// TALS-SR= Trauma And Loss Spectrum-Self Report Instrument Questionnaire

Table 2.

Qualitative studies about the relationship between bereavement and addiction

Authors (Date) Country	Purpose of Study	Sample characteristics (sample size; age; type of drug…)	Method	Results (Is there any evidence of a relationship between loss and addiction?)
Bammer&Weekes (1994). Australia	Factors in stopping dependent heroin use (with and without treatment)	N=18 participants (aged 20-47 years) who had become non-dependent on heroin or abstinent at least 2 years ago and in the last 5 years. They did not adhere strictly to this criteria	2-3h interviewed sessions	Yes, loss triggered a positive consequence (stopping consumption)
Coleman (1980). U.S.A	The inability to mourn creatively may well be a function of family characteristics which emerge at the time a member dies	n=25 drug addicted families	Not available/ theoretical approach	Yes, death separation and loss were significant etiological factors in heroin-addict families. 72% of them experienced at least 1 traumatic or unexpected loss of a loved one
Goldberg (1980). U.S.A	Examine the loss in relation to the alcoholic and the disease of alcoholism	Focused on alcoholic patients	Not available/ theoretical approach	Yes, exhibition of different grief work techniques. Importance of promoting social support network
Gray (1998). U.S.A.	Examine the prevalence of substance abuse and its potential relationships with physical and emotional trauma or loss that occurs in Native American adolescents	Native American adolescents with SUDS	Review different studies	It was critical to attend issues of psychological trauma during treatment for substance abuse. It appeared likely that focusing on such issues will enhance client treatment response and may help prevent relapse after treatment.
Hammersley et al. (2015)	Document childhood trauma in the life stories of people who have injected drugs	55 participants who had injected drugs in the previous 5 years	Dan McAdams' Life Story Method to collect narrative data	Yes, childhood trauma was a major component of the lives of many problem drug users.
Moss (2005). U.S.A	Examine the losses related to heroin use that the addict experienced due to ending the relationship with the drug	N=12 heroin addicts in a detoxification facility	Qualitative research based on grounded theory	Yes. The recovering heroin addicts have a strong bond or relationship with heroin during the developmental stage of use and the result was an enmeshment with the components of the heroin addiction. A heroin addict has difficulty ending their relationship with the drug and that result was unresolved grief and disenfranchised grief if not addressed in treatment.
Stanton. (1977). U.S.A.	Place the death and addiction relationship within a familial, interpersonal systems context, and describe some of the process that attend it and discuss its function for the family	Drug addict patients	Not available/ theoretical approach	Yes. Drug dependent people were placed in the role of savior because their death was seen as a noble, cleansing sacrifice in which they were often a willing participant

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INFORME DE LA COMISIÓN DE INVESTIGACIÓN

El Dr. Josep Garre Olmo, director de la Comisión de Investigación (CI) del Institut d'Assistència Sanitària,

CERTIFICA

Que esta comisión ha evaluado el día 10 de julio de 2012, en reunión extraordinaria, la solicitud de aclaraciones de la propuesta presentada por la Sra. Laura Masferrer Boix, psicóloga del Centro de Atención y Seguimiento a las Drogodependencias CAS Teresa Ferrer del Institut d'Assistència Sanitària (IAS) de Girona [El proyecto se enmarca en el contexto de tesis doctoral adscrita al Departamento de psicología de la Universidad de Girona (tutora: Dra. Bea Caparrós)] "**Addiccions i processos de pèrdua**" y **acuerdan informar**:

- Que el ámbito de investigación en que se enmarca el protocolo es de interés científico y que el éxito de los objetivos propuestos permitirán estudiar la relación del proceso de pérdida de un familiar de primer grado o de una persona significativa entre personas diagnosticadas de trastorno por dependencia a tóxicos (alcohol, cocaína o heroína).
- Que este estudio será realizado por la Sra. Laura Masferrer Boix, investigadora principal en nuestro centro, y con el equipo de trabajo que consta en el protocolo y revisado por mí como director de la CI.
- Que sigue las normas éticas propias para este tipo de estudios.
- Que siguiendo la normativa del reglamento interno para la evaluación de protocolos de investigación biomédica, la CI informa **FAVORABLEMENTE** de la realización del estudio el mismo día 10 de julio de 2012, **y considera que**, de forma general:
  - se cumplen los requisitos necesarios de idoneidad del protocolo en relación a los objetivos del estudio;
  - la capacidad del grupo investigador y los medios disponibles son los apropiados para llevar a cabo el estudio; y
  - la compensación prevista para la realización del estudio es apropiada.

Asimismo, esta comisión **HACE CONSTAR** que tanto en su composición como en sus procedimientos de trabajo cumple con la normativa vigente y con las directrices de la Conferencia Internacional de Armonización de las Normas de Buena Práctica Clínica (CPMP/ICH/135/95).

La composición actual de la Comisión de investigación del Institut d'Assistència Sanitària es la siguiente:

Director:	Dr. Josep Garre Olmo, psicólogo y epidemiólogo
Secretaría tecnicoadministrativa:	Sra. Sílvia Monserrat Vila, traductora e intérprete

Vocales:

Dra. Remei Girona Bastús, médico
Sra. Meritxell Baró Dilme, trabajadora social
Sra. Ivana Fdez. de Trastámara Caminals, enfermera
Dr. Miquel Carreras Massanet, médico
Sr. Jordi Cid Colom, psicólogo
Dr. Lluís Franch Viñas, médico
Dr. José Antonio Becerra Fontal, médico
Sra. Pilar Oliveras Mach, enfermera
Dra. Cristina Lombardía Fernández, médico
Sra. Cati Ferriol Busquets, enfermera
Dr. Antoni Rodríguez Poncelas, médico
Dra. Cristina Soler Ferrer, médico
Sra. Eva Tarrés Brugué, contable
Dr. Joan Vilalta Franch, médico
Dr. Secundí López-Pousa, médico
Sra. Rocío Jurado Pérez, enfermera
Dr. Domènec Serrano Sarbosa, médico
Sr. Jordi Font Pujol, enfermero
Sra. Maribel Garcia Tomàs, administrativa

Dr. Josep Garre Olmo
Director de la Comisión de Investigación
Institut d'Assistència Sanitària

Salt, 11 de julio de 2012

INFORME DEL COMITÉ ÉTICO DE INVESTIGACIÓN CLÍNICA

La Sra. Sílvia Monserrat Vila, secretaria técnica del Comité Ético de Investigación Clínica del Institut d'Assistència Sanitària,

CERTIFICA

Que este comité ha evaluado el día 19 de junio de 2012, en reunión ordinaria, el estudio observacional **"Addicions i processos de pèrdua"** presentado Sra. Laura Masferrer Boix, psicóloga del CAS Teresa Ferrer de Girona. El proyecto es la tesis doctoral de la investigadora, inscrita a la Universitat de Girona. Su tutora es la Dra. Bea Caparrós. El CEIC-IAS actúa como CEIC de referencia.

Y considera que, de forma general:

Una vez valorados los apartados de este protocolo juntamente con el manual del investigador, y de acuerdo con las disposiciones legales vigentes para estudios epidemiológicos (International Guidelines for Ethical Review of Epidemiological Studies), así como la versión actualizada de la Declaración de Helsinki, y la Orden SAS/3470/2009, y aplicados por el CEIC-IAS para todos los protocolos de investigación de este tipo que se evalúen, este comité ético de investigación clínica **ACUERDA informar del estudio como FAVORABLE**.

Asimismo, este comité **HACE CONSTAR** que tanto en su composición como en sus PNTs cumple con la normativa vigente y con las directrices de la conferencia Internacional de Armonización de las Normas de Buena Práctica Clínica (CPMP/ICH/135/95).

La composición actual del Comité Ético de Investigación Clínica del Institut d'Assistència Sanitària es la siguiente:

Presidente: Dr. Gabriel Coll de Tuero, médico
Secretaria tecnicoadministrativa: Sra. Sílvia Monserrat Vila, traductora e intérprete

Vocales:
Dr. Secundí López-Pousa, médico
Sra. Laura Mallart Romero, farmacéutica
Sra. Sílvia Pla Vilà, atención usuario
Dr. Marc Pérez Oliveras, médico
Sr. Joan Canimas Brugué, filósofo
Dr. Joan Vilalta Franch, médico
Dr. Josep Garre Olmo, psicólogo y epidemiólogo
Dr. Miquel Carreras Massanet, médico
Sra. Marisa Jofre Valls, enfermera
Sra. Emília de Puig de Cabrera, farmacéutica
Sra. Cati Ferriol Busquets, enfermera
Dr. Manuel de Gracia Blanco, psicólogo
Sra. Maria Jesús Costa Serra, abogada
Dra. Pilar Àvila Castells, farmacóloga
Sra. Montserrat Cols Jiménez, farmacéutica
Dra. Cristina Soler Ferrer, médico

COMITÈ ÈTIC D'INVESTIGACIÓ CLÍNICA (CEIC-IAS) — IAS Institut d'Assistència Sanitària
Núm. S041-779
Data 04/07/2012 Hora 14:46
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Sra. Sílvia Monserrat Vila
Secretaria técnica del CEIC-IAS

Salt, 20 de junio de 2012

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CONFORMIDAD DE LA DIRECCIÓN DEL CENTRO (INSTITUT D'ASSISTÈNCIA SANITÀRIA)

El Dr. Claudi Camps García, como Director médico de la Red de Salud Mental del Instituto de Asistencia Sanitaria (IAS) de Girona, con la autorización del Comité Ético de Investigación Clínica-IAS,

Y, la Sra. Teresa Vilalta Altés, como directora de enfermería de atención primaria, atención especializada y atención sociosanitaria del Instituto de Asistencia Sanitaria (IAS) de Girona, con la autorización del Comité Ético de Investigación Clínica-IAS,

CERTIFICAN

Que conocen la propuesta de estudio observacional **"Addicions i processos de pèrdua"** presentada Sra. Laura Masferrer Boix, psicóloga del CAS Teresa Ferrer de Girona.

Qu el proyecto es la tesis doctoral de la investigadora, inscrita a la Universitat de Girona.

Que su tutora es la Dra. Bea Caparrós.

Que el CEIC-IAS actúa como CEIC de referencia.

Que este estudio será realizado con la colaboración del personal médico, de enfermería y de administración del CAS Teresa Ferrer del Institut d'Assistència Sanitària de Girona y revisado por mí como Director médico y directora de enfermería del centro.

Que se guardarán las normas éticas propias para esta clase de estudios.

Que está de acuerdo con la documentación aportada en el que se especifican todos los aspectos económicos y sociales de este estudio.

Que el protocolo que se presenta fue firmado por la enfermera que ha intervenido en el mismo, que mantiene su veracidad y rigor científico, y mi conformidad como Director médico de la Red de Salud Mental y directora de enfermería de atención primaria, atención especializada y atención sociosanitaria del Instituto de Asistencia Sanitaria (IAS) de Girona.

Y para que conste, se firma el presente certificado en Salt, a 20 de junio de 2012.

Dr. Claudi Camps García
Director médico de la Red de Salud Mental
del Instituto de Asistencia Sanitaria (IAS) de Girona

Sra. Teresa Vilalta Altés
Directora de enfermería de atención primaria,
atención especializada y atención sociosanitària
del Instituto de Asistencia Sanitaria (IAS) de Girona

COMITÈ ÈTIC D'INVESTIGACIÓ CLÍNICA (CEIC-IAS)
IAS Institut d'Assistència Sanitària
Núm. S041-780
Data 04/07/2012 Hora 14:47
Registre de sortida

30790

CatSalut Servei Català de la Salut

***Annex 4**. Information document for participation & informed consent (clinical sample)*

Full informatiu de participació

Títol de l'estudi

Addiccions i processos de pèrdua

Quina és la finalitat de l'estudi?

S'ha vist que les persones diagnosticades de trastorn per dependència a l'alcohol o trastorn per dependència a la cocaïna o trastorn per dependència a l'heroïna que han patit pèrdues de persones al llarg de la seva vida que poden ser significatives o estar relacionades d'alguna manera amb el seu problema de dependència. Estem molt interessats en poder estudiar quina és la relació entre haver viscut la mort d'un familiar (de primer grau) o una persona significativa i l'addicció per tal d'avaluar si la vivència del dol afecta a l'inici o al manteniment de l'addicció.

En què consisteix la meva participació?

Vostè ha acceptat participar en l'estudi "Addiccions i processos de pèrdua", un estudi que actualment s'està portant a terme a la zona de referència del CAS Teresa Ferrer (Institut d'Assistència Sanitària). La seva participació a l'estudi és voluntària i ha de saber que el fet de no participar-hi no afectarà en cap moment la qualitat de l'assistència sanitària a la qual té dret. Vosté com a participant voluntari té dret a retirar-se en qualsevol moment de l'estudi, sense que aquest fet afecti en res la seva relació amb el servei sanitari del CAS.

La meva participació serà confidencial?

Sí, totalment tal com obliga la Llei Orgànica 15/1999 de Protecció de Dades de Caràcter Personal. Els resultats dels diferents qüestionaris només seran utilitzats per realitzar les anàlisis esmentades anteriorment. A més, totes les dades que es recullin es codificaran en una base de dades i es mantindrà la confidencialitat de la informació de tots els participants. A totes els participants se'ls assignarà un número, de manera que no serà possible conèixer la identitat de cap d'ells. Segons la Llei Orgànica 15/1999 de 13 de desembre de Protecció de Dades de Caràcter Personal, vostè té el dret d'accés, rectificació o cancel·lació dels seus registres de la base de dades de l'estudi (Art. 5.d i art. 14, 15, 16 i 17 de la Llei Orgànica 15/1999).

Quins beneficis m'aporta la meva participació?

La participació en aquest estudi comporta la realització de cinc qüestionaris on s'avaluarà: aspectes de personalitat i psicopatologia, estratègies d'afrontament, el

suport social percebut, l'existència de dol complicat i la ideació suïcida. Si vostè està interessat en els resultats de la investigació, un cop analitzades les dades, se li faran arribar les conclusions generals de l'estudi (Art. 38.1 RD 223/2004).

Suposa alguna despesa per a mi?

La seva participació és totalment voluntària i no implica cap despesa econòmica per part seva. La única despesa que pot considerar és el temps que vostè haurà de dedicar mentre emplena els qüestionaris.

A qui puc dirigir-me per més informació?

Per a més informació pot posar-se en contacte amb la investigadora principal d'aquest estudi, que és la Laura Masferrer, psicòloga del CAS Teresa Ferrer (IAS) al telèfon 972.20.55.05

CONSENTIMENT INFORMAT

Addiccions i processos de pèrdua

Jo (Nom i cognoms).....

He llegit la nota informativa que m'han entregat.

He pogut realitzar les preguntes sobre l'estudi.

He rebut suficient informació sobre l'estudi.

He parlat amb (nom de l'investigador).....

Entenc que la meva participació és voluntària.

Entenc que puc retirar-me de l'estudi:

1º. Quan vulgui.

2º. Sense haver de donar explicacions.

3º. Sense que això repercuteixi sobre les meves cures mèdiques.

Dono la meva conformitat per participar en l'estudi.

Firma del participant

Firma de l'investigador de l'estudi

Girona, ... de .....de 2013

FULL DE REGISTRE (mostra clínica)

Codi identificació:

VARIABLES DESCRIPTIVES GENERALS

Edat:…… Sexe: *Home Dona* Estat civil: *solter/a casat/da separat/da divorciat/da vidu/a*

País procedència: …….. Ètnia:.....

Nivell formació:……. Nivell socioeconòmic:.....

Diagnòstic principal: *Tr.dep. Alcohol Tr. dep. Cocaïna Tr. dep. Heroïna*

Diagnòstics secundaris:.....

Fills:.....Creenc. religioses:.....

VARIABLES ESPECÍFIQUES

Història toxicològica Data ingrés CAS:.....

Substància que motiva el tractament:.....

Edat inici:..... Edat increment:..... Quantitat:..... Freqüència:.....

Anys evolució addicció:

Tractaments previs: *No Si: UPD UDH CT CAS Altres*:

Nombre de recaigudes (subst):..... Anys recaig:.....

Motiu percebut recaig:.....

Antecedents familiars addicció (*indicar substància i relació de parentesc*):

.....

.....

Pren algun fàrmac:.....

Malaltia física:.....

Antecedents personal legals:

nº estades presó: nº judicis pendents: nº judicis realitzats:

motiu judicis:

Rel P-D?...

....

Vivència **pèrdua significativa** (familiar de primer grau o persona significativa):

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):...

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: ....anys

Antecedents suïcidi: si no

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):...

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: ....anys

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):...

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: ....anys

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):...

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: ....anys

***Annex 6**. Information document for participation & informed consent (control sample)*

Full informatiu de participació

Títol de l'estudi

Addiccions i processos de pèrdua

Quina és la finalitat de l'estudi?

Estem molt interessats en poder estudiar quina és la relació entre haver viscut la mort d'un familiar (de primer grau) o una persona significativa i l'addicció per tal d'avaluar si la vivència del dol afecta a l'inici o al manteniment de l'addicció a l'alcohol o altres substàncies. Per poder fer aquest estudi rigorós, ens cal poder comparar les dades amb participants que no presentin dependència a tòxics, és a dir, persones que formaran part del grup control.

En què consisteix la meva participació?

Vostè ha acceptat participar en l'estudi "Addiccions i processos de pèrdua", un estudi que actualment s'està portant a terme a la zona de referència del CAS Teresa Ferrer (Institut d'Assistència Sanitària). La seva participació a l'estudi és voluntària i totalment anònima. Vosté com a participant voluntari té dret a retirar-se en qualsevol moment de l'estudi. La participació en aquest estudi comporta la realització de cinc qüestionaris on s'avaluarà: aspectes de personalitat i psicopatologia, estratègies d'afrontament, el suport social percebut, l'existència de dol complicat i la ideació suïcida.

La meva participació serà confidencial?

Sí, totalment tal com obliga la Llei Orgànica 15/1999 de Protecció de Dades de Caràcter Personal. Els resultats dels diferents qüestionaris només seran utilitzats per realitzar les anàlisis esmentades anteriorment. A més, totes les dades que es recullin es codificaran en una base de dades i es mantindrà la confidencialitat de la informació de tots els participants. A totes els participants se'ls assignarà un número, de manera que no serà possible conèixer la identitat de cap d'ells. Segons la Llei Orgànica 15/1999 de 13 de desembre de Protecció de Dades de Caràcter Personal, vostè té el dret d'accés, rectificació o cancel·lació dels seus registres de la base de dades de l'estudi (Art. 5.d i art. 14, 15, 16 i 17 de la Llei Orgànica 15/1999).

Quins beneficis m'aporta la meva participació?

L'estudi permetrà un benefici general per tal d'entendre millor l'addicció i així poder ajudar a les persones que presenten aquest problema. Si vostè està interessat en els

resultats de la investigació, un cop analitzades les dades, se li faran arribar les conclusions generals de l'estudi (Art. 38.1 RD 223/2004).

Suposa alguna despesa per a mi?

La seva participació és totalment voluntària i no implica cap despesa econòmica per part seva. La única despesa que pot considerar és el temps que vostè haurà de dedicar mentre emplena els qüestionaris.

A qui puc dirigir-me per més informació?

Per a més informació pot posar-se en contacte amb la investigadora principal d'aquest estudi, que és la Laura Masferrer, psicòloga del CAS Teresa Ferrer (IAS) al telèfon 972.20.55.05

CONSENTIMENT INFORMAT

Addiccions i processos de pèrdua

Jo (Nom i cognoms).....

He llegit la nota informativa que m'han entregat.

He pogut realitzar les preguntes sobre l'estudi.

He rebut suficient informació sobre l'estudi.

He parlat amb (nom de l'investigador).....

Entenc que la meva participació és voluntària.

Entenc que puc retirar-me de l'estudi:

1º. Quan vulgui.

2º. Sense haver de donar explicacions.

3º. Sense que això repercuteixi sobre les meves cures mèdiques.

Dono la meva conformitat per participar en l'estudi.

Firma del participant Firma de l'investigador de l'estudi

Girona, ... de .....de 2015

FULL DE REGISTRE (control grup)

Codi identificació:

VARIABLES DESCRIPTIVES GENERALS

Edat:…… Sexe: *Home Dona* Estat civil: *solter/a casat/da separat/da divorciat/da vidu/a*

País procedència: …….. Ètnia:.....

Nivell més alt d'estudis assolits :…….....

Sou darrer mes:.....Fills:.....Creences religioses:.....

VARIABLES ESPECÍFIQUES

Consum de substàncies

Tabac: No Si : *freqüència*: diari setmanal ocasional *quantitat*:.....

Edat inici:..... Edat increment:.....

Alcohol: No Si : *freqüència*: diari setmanal ocasional *quantitat*: :.....

Edat inici:..... Edat increment:.....

Cocaïna: No Si : *freqüència*: diari setmanal ocasional *quantitat*: :.....

Heroïna: No Si : *freqüència*: diari setmanal ocasional *quantitat*: :.....

Drogues de disseny: No Si : *freqüència*: diari setmanal ocasional *quantitat*:.....

Joc: No Si : *freqüència*: diari setmanal ocasional *quantitat*: :.....

Altres: No Si (quina:.....) *freqüència*: diari setmanal ocasional *quantitat*:.....

Antecedents familiars addicció (*indicar substància i relació de parentesc*):

.....

.....

Pren algun fàrmac:.....

Malaltia física:.....

Antecedents personal legals:

nº estades presó: *nº judicis pendents:* *nº judicis realitzats:*

Antecedents familiars de suïcidi: No Si: quin membre de la família:.....

Antecedents familiars de temptatives de suïcidi: No Si : quin membre de la Família.....

Temptatives de suïcidi de vostè: No Si

Vivència **pèrdua significativa** (familiar de primer grau o persona significativa):

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):.....

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: .....anys

Considera que la mort d'aquesta persona el va influir respecte el seu consum de substàncies?.....

.....

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):.....

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: .....anys

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):.....

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: .....anys

Gens afectat/da *0 1 2 3 4 5 6 7 8 9 10* *Molt afectat/da*

Relació amb el difunt/a (*especificar grau parentesc o amistat*):.....

Circumstàncies de la mort: *Natural Suïcidi Accident Sobredosi Malaltia Desconegut Altres*

Edat del participant quan la persona significativa va morir: .....anys

Institut
d'Assistència
Sanitària

Girona, 23/05/2017

Benvolgut/da,

Vostè va col·laborar com a participant en l'elaboració de l'estudi sobre dol complicat i drogodependències, titulat: "*Dol i addicció: símptomes de dol complicat, psicopatologia i variables associades en una mostra de persones amb TUS (trastorn per ús de substàncies)*".

Ens posem en contacte amb vostè per **agrair-li el temps que va dedicar a l'estudi**. Gràcies a la seva participació, s'ha pogut realitzar l'estudi que m'ha permès redactar la meva tesi doctoral. Aprecio la seva ajuda, sinceritat i disposició en respondre totes les preguntes i qüestionaris.

La **seva contribució** a aquesta investigació **ha estat molt valuosa**. La investigació clínica ajuda a identificar els factors implicats en els trastorns psicològics i això permet millorar les intervencions i tractament per als pacients. Esperem que aquesta recerca ajudarà a millorar el tractament de les addiccions en el futur.

Si desitja rebre més informació sobre l'estudi, no dubti en escriure'm (laura.masferrer@ias.cat)

Resto a la seva disposició per qualsevol dubte,

Laura Masferrer Boix

Psicòloga del CAS Teresa Ferrer. CAS Ripollès. (IAS).

c/ Baldiri Reixach, nº 50. Girona. Telf. 972.20.55.05

Mail: laura.masferrer@ias.cat