Sozioökonomische Ungleichheit beim Gebrauch psychoaktiver Substanzen

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Gender-Erklärung

Aus Gründen der besseren Lesbarkeit wird in der vorliegenden Dissertation die Sprachform des generischen Maskulinums angewandt. Es wird an dieser Stelle darauf hingewiesen, dass die ausschließliche Verwendung der männlichen Form geschlechtsunabhängig verstanden werden soll.

Zusammenfassung

Der Gebrauch psychoaktiver Substanzen ist mit diversen gesundheitlichen und sozialen Risiken verbunden und die Reduzierung des Gebrauchs daher von besonderer Public-Health-Relevanz. Um die Konsummuster in der Gesellschaft greifbar zu machen, und um dementsprechende Präventions- und Interventionsempfehlungen ableiten zu können, ist eine deskriptive statistische Darstellung der Konsummuster sowie die Exploration potenzieller Ursachen zwingend erforderlich.

Eine entscheidende Rolle bei der Betrachtung des Gebrauchs psychoaktiver Substanzen auf Bevölkerungsebene spielt die soziale Ungleichheit, denn Studien zufolge scheint das Ausmaß des Substanzmittelgebrauchs nicht gleichmäßig über die unterschiedlichen sozialen Statusgruppen verteilt zu sein. Während innerhalb der sozialepidemiologischen Forschung ein breiter Konsens über den negativen sozialen Gradienten bei Morbidität und Mortalität herrscht (d.h. je niedriger der sozioökonomische Status einer Person, desto größer das Morbiditäts- und Mortalitätsrisiko), ergibt sich ein weniger klares Muster beim sozialen Gradienten des Substanzmittelgebrauchs. Unklarheit existiert ebenso zur weiterführenden Frage nach den potentiellen Ursachen der sozialen Ungleichheit beim Substanzmittelgebrauch.

Die vorliegende Dissertation verfolgte das übergeordnete Ziel, mehr Empirie zu einem noch nicht tiefgehend untersuchten Zusammenhang von sozioökonomischem Status und Substanzmittelgebrauch zu generieren. In einem ersten Forschungsvorhaben wurde die Beschaffenheit des sozialen Gradienten beim Substanzmittelgebrauch erforscht, indem in einem explorativen, vergleichenden Ansatz vier verschiedene psychoaktive Substanzen (Tabak, Alkohol, Cannabis, Schmerzmittel) nach drei unterschiedlichen Indikatoren für sozioökonomischen Status (beruflicher Status, berufliche soziale Klasse, Erwerbstätigkeitsstatus) stratifiziert und gegenübergestellt wurden. In einem zweiten Forschungsvorhaben wurde die kausale Verkettung beim Zusammenhang von

sozioökonomischem Status und Substanzmittelgebrauch am Beispiel des Medikamentengebrauchs untersucht. Der deutsche Epidemiologische Suchtsurvey (ESA) 2012, ein repräsentativer Datensatz mit einer Stichprobe von n=9.084 aus der 18- bis 64-jährigen deutschen Bevölkerung, diente in beiden Studien als Datengrundlage.

Die erste Studie hat gezeigt, dass die Ausrichtung des sozialen Gradienten beim Substanzmittelgebrauch davon abhängt, wie der Zusammenhang konzeptualisiert wurde. Der soziale Gradient variierte, je nachdem welche Substanz im Fokus stand, wie die jeweilige Substanz operationalisiert wurde, und welcher Indikator für sozioökonomischen Status zur Anwendung kam. Generalisierte und vereinheitlichte Aussagen zum sozialen Gradienten beim Substanzmittelgebrauch sind demzufolge als problematisch zu bewerten. Als einziges substanzübergreifendes Konsummuster hat sich gezeigt, dass Männer aus sozial benachteiligten Statusgruppen eher zu problematischem Konsum neigen.

Die Ergebnisse der zweiten Studie unterschieden sich ebenfalls wesentlich zwischen Männern und Frauen. Während ein erhöhter Medikamentengebrauch bei Männern aus sozial benachteiligten Statusgruppen fast vollständig auf den schlechteren Gesundheitszustand zurückzuführen war, ergab sich ein unklares Bild beim Medikamentengebrauch unter Frauen.

Insgesamt sprechen die Ergebnisse beider Studien dafür, dass eine Verbesserung der prekären Lebensverhältnisse in sozial benachteiligten Statusgruppen eine Reduzierung des Substanzmittelgebrauchs zur Folge haben könnte. Insbesondere der problematische Konsum scheint unter Personen mit niedrigem Sozialstatus als wichtiger Risikofaktor für die Gesundheit zu gelten. Präventiven Maßnahmen an Orten mit sozialer Segregation (z.B. Schulen, Unternehmen, Wohnviertel) kann dementsprechend hohe Relevanz beigemessen werden.

Summary

Use of psychoactive substances is associated with several health and social consequences, thus use reduction is of great relevance for public health. Descriptive statistics and an exploration of potential causes are required to make consumption patterns visible and to infer proper prevention and intervention measures.

A key issue in the monitoring of psychoactive substance use on population level is the societal social inequality. Studies have shown that the distribution of substance use is not equal across different social status groups. While in social-epidemiological studies a broad consensus exists about the negative social gradient of morbidity and mortality (i.e. the lower the socio-economic status of a person, the higher the risk for morbidity and mortality), the characteristics of the social gradient of substance use remain unclear. Ambiguity also exists regarding potential causes of social inequalities in the use of psychoactive substances.

The greater aim of the present dissertation was to add clarity to the the scarcely explored association of socio-economic status and substance use by providing further empirical evidence. In the first of two research projects, characteristics of the social gradient of substance use were examined by applying a comparative assessment. Four different substances (tobacco, alcohol, cannabis, analgesics) were stratified by three different indicators of socio-economic status (occupational status, occupational social class, employment status). In the second research project, causal pathways from socio-economic status to an exemplarily selected substance (medicine use) were investigated to explore potential causes of social inequalities in substance use. The German Epidemiological Survey of Substance Abuse (ESA) 2012, a representative sample of n=9.084 participants drawn from the 18- to 64-year-old German population, was used as data basis in both studies.

The first study showed that the direction of the social gradient of substance use depends on the conceptualization of the association. The social gradient varied by the considered substance,

its operationalization, and the applied indicator of socio-economic status. Generalized and simplified conclusions about the social gradient of substance use are therefore critical. The only consistent consumption pattern across different substances was that of underprivileged males who tended to engage in problematic use.

Results of the second study also varied by gender. While an increased use of medicines among males of socially deprived status groups can be fully explained by their poorer health status, ambiguous results were found for females.

Taken as a whole, results of both studies indicated that an improvement of deprived conditions in life among people of lower social status groups could induce a reduction of substance use. In particular, problematic use among underprivileged individuals seems to be a major hazard for human health. Places with social segregation (e.g. schools, workplaces, neighbourhoods) are thus of great relevance for preventive measures.

Publikationsliste

1. Occupational inequalities in psychoactive substance use: A question of conceptualization?

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Maron, J., Kraus, L., Pogarell, O., Gomes de Matos, E., Piontek, D. (2015). Occupational inequalities in psychoactive substance use: A question of conceptualization? *Addiction Research & Theory*, 24(3):186-198. doi: 10.3109/16066359.2015.1093122

2. Exploring socio-economic inequalities in the use of medicines: is the relation mediated by health status?

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1 Einleitung

Der Gebrauch von Alkohol, Tabak, Medikamenten und illegalen Drogen trägt substanziell zu Morbidität und Mortalität in der Bevölkerung bei und ist mit zunehmenden volkswirtschaftlichen Kosten verbunden – und das trotz großer Bemühungen seitens der Politik, den Konsum legaler und illegaler Rauschmittel zu reduzieren (Galea et al., 2004). Laut Weltgesundheitsorganisation zählt der Gebrauch psychoaktiver Substanzen zu den am ehesten vermeidbaren Risikofaktoren der menschlichen Gesundheit (World Health Organization, 2009), und doch gingen 2010 innerhalb der Europäischen Union 18 % der Krankheitslast (Total Years of Life Lost) auf den Tabakkonsum, 8 % auf den Alkoholkonsum sowie 2 % auf den Konsum illegaler Drogen zurück (Anderson et al., 2017). Die Folgen des Substanzmittelmissbrauchs reichen von körperlichen und psychischen Leiden wie Krebs, koronare Herzkrankheit, Leberzirrhose, Hirn- und Nierenschäden, Depressionen oder Psychosen bis hin zu sozialem Abstieg durch Arbeitsplatzverlust oder Beschaffungskriminalität (World Health Organization, 2009; Galea et al., 2004). Dementsprechend hoch ist die Relevanz von Prävention und Intervention zur Reduzierung des schädlichen Gebrauchs psychoaktiver Substanzen. Für die Durchführung gezielter Präventions- und Interventionsmaßnahmen ist die Exploration von Konsummustern und möglichen Ursachen unerlässlich.

Studienergebnisse deuten darauf hin, dass der Gebrauch psychoaktiver Substanzen in der Bevölkerung nicht gleichmäßig verteilt ist – insbesondere hinsichtlich der gesellschaftlichen sozialen Ungleichheit (z.B. Knopf & Melchert, 2003; Henkel, 2000; Nielsen et al., 2004; Bloomfield et al., 2000; Lampert, 2010). Während innerhalb der sozialepidemiologischen Forschung ein breiter Konsens über den negativen sozialen Gradienten bei Morbidität und Mortalität herrscht (d.h. je niedriger der sozioökonomische Status einer Person, desto größer ihr Morbiditäts- und Mortalitätsrisiko) (z.B. Mackenbach et al., 2008; Mielck, 2005), ergibt sich ein weniger klares Muster beim sozialen Gradienten des Substanzmittelgebrauchs, denn

die Beziehung zwischen sozioökonomischem Status und Substanzmittelgebrauch scheint sich keinesfalls einfach und unidirektional zu gestalten (Patrick et al., 2012; Huckle et al., 2010; Humensky, 2010). Ein niedriger sozialer Status führt demnach beim Substanzmittelgebrauch – anders als bei Morbidität und Mortalität – nicht zwangsläufig zu einem erhöhten Outcome (Room, 2004). Einige Beispiele sollen diese These veranschaulichen.

Regelmäßiger moderater Alkoholkonsum scheint unter Erwerbstätigen weiter verbreitet zu sein, als unter Arbeitslosen (Bloomfield, 1998; Institut für Arbeitsmarkt- und Berufsforschung der Bundesagentur für Arbeit, 2014). Ein umfassender Literaturreview zeigte hingegen, dass starker Alkoholkonsum tendenziell häufiger unter Arbeitslosen anzutreffen sei (Henkel, 2011). Passend dazu haben Studien mit Fokus auf Bildungsunterschiede bei starkem Alkoholkonsum gezeigt, dass Personen mit niedrigem Bildungsstand am häufigsten exzessive Trinkmuster (Schnohr et al., 2004) sowie eine erhöhte Wahrscheinlichkeit für problematischen Konsum aufweisen (Huerta & Bongorovi, 2010). Im Hinblick auf den Konsum von Tabak trifft für die meisten Europäischen Länder zu, dass die Raucher-Prävalenz unter Personen mit niedriger Bildung und geringem Einkommen am höchsten ist (Mackenbach, 2006), wohingegen andere Studien mit Fokus auf Tabakkonsum keine signifikanten Unterschiede zwischen Arbeitslosen und Beschäftigten feststellen konnten (z.B. Lampert & Ziese, 2005). Ähnlich kontroverse Ergebnisse wurden zu weiteren Substanzen wie Cannabis oder Medikamenten berichtet (Adhikari & Summerill, 2000; Alonso et al., 2004; Grinshpoon et al., 2007; Kipping et al., 2015; Legleye et al., 2012; Sandwijk et al., 1995).

1.1 Sozioökonomische Unterschiede beim Substanzmittelgebrauch: Eine Frage der Konzeptualisierung?

Diese Beispiele deuten darauf hin, dass die Ausrichtung des sozialen Gradienten beim Substanzmittelgebrauch nicht immer unidirektional ist. Die Muster des Substanzmittelgebrauchs scheinen von der Konzeptualisierung abzuhängen, d.h. sie variieren,

je nachdem wie der sozioökonomische Status und die Substanz in Studien operationalisiert wurden, aber auch danach, welche Substanz im Fokus der Untersuchung stand (Room, 2004).

In epidemiologischen Studien wird der sozioökonomische Status typischerweise mithilfe von einem der drei nachfolgenden Indikatoren operationalisiert: Bildungsniveau, Einkommen oder Berufsprestige. Am komplexesten gestaltet sich die Operationalisierung des *Berufsprestiges* (Galobardes et al., 2006; Oakes & Rossi, 2003). Mindestens drei verschiedene methodische Konzepte lassen sich in der Literatur ausfindig machen: der Erwerbstätigkeitsstatus, der berufliche Status sowie die sogenannte berufliche soziale Klasse. Das Konzept des *Erwerbstätigkeitsstatus* vergleicht den gegenwärtigen Status der wirtschaftlichen Aktivität des Individuums, d.h. erwerbstätig versus nicht-erwerbstätig (Henkel, 2011). Dem *beruflichen Status* liegt eine hierarchische Struktur mit meist fünf Abstufungen zugrunde und spiegelt die berufliche Position einer Person wider (Hoffmeyer-Zlotnik & Warner, 2012; Lampert & Kroll, 2009). Je nachdem ob das Level an Autonomie und Verantwortung im Job hoch (z.B. akademischer Freelancer) oder niedrig (z.B. ungelernter Arbeiter) ist, wird dem Befragten ein höherer oder niedrigerer beruflicher Status zugeordnet. Insbesondere in Studien aus Großbritannien wird häufig ein weiterer Indikator mit der Bezeichnung *berufliche soziale Klasse* verwendet. Hierbei werden „blue-collar“ und „white-collar“ Arbeiter gegenübergestellt. Der Gruppe der „blue-collar“ Arbeiter werden Industriearbeiter, ungelernte Arbeiter, Handwerker oder Dienstleistende zugeordnet, während Büroangestellte, Beamte, Meister, Vorarbeiter, Gruppenleiter, Angestellte mit Personalverantwortung, leitende Angestellte oder Akademiker der „white-collar“-Gruppe zugeordnet werden (Mäkelä et al., 2015). Die sprachliche Unterscheidung spielt auf die typische Arbeitsbekleidung der jeweiligen Gruppe an. Ein weiterer häufig eingesetzter Indikator für sozioökonomischen Status ist das *Bildungsniveau*. Es wird zumeist auf Basis der International Standard Classification of Education (ISCED) (UNESCO, 2015) oder alternativ anhand der Ausbildungsdauer gemessen (Liberatos et al., 1988). Um das *Einkommen* einer

Person zu ermitteln, wird in der Regel das Haushalts-Netto-Einkommen erfragt, welches man anschließend durch die Anzahl der im Haushalt lebenden Individuen dividiert (Pro-Kopf-Haushalts-Netto-Einkommen) (Hoffmeyer-Zlotnik & Warner, 1998).

Wie die einleitend angeführten Beispiele verdeutlicht haben, kann die sozioökonomische Ungleichheit beim Substanzmittelgebrauch außerdem nach der betrachteten Substanz und deren Operationalisierung variieren. Zum einen können unterschiedliche Substanzen wie Alkohol, Tabak, Medikamente oder Cannabis untersucht werden. Zum anderen gibt es eine Vielzahl an Messgrößen, die den Konsum der jeweiligen Substanz statistisch beschreiben. Prävalenzraten (d.h. der Anteil an Personen in einer Population, die eine Substanz in einem bestimmten Zeitrahmen konsumiert haben) und allgemeine Häufigkeiten (d.h. die durchschnittliche Anzahl an Konsumtagen in einer bestimmten Zeit) können allgemeine Informationen über die Konsummuster einer Substanz liefern und lassen sich grundsätzlich gut auf alle Substanzen anwenden (Room, 2004; RARHA 2016). Die Definitionen der Messgröße für starken Konsum differieren hingegen erheblich von Substanz zu Substanz. Ein häufig verwendeter Indikator zur Beschreibung von starkem Alkoholkonsum ist die Häufigkeit des episodischen Rauschtrinkens (engl. episodic heavy drinking), typischerweise definiert als die durchschnittliche Anzahl an Tagen, an denen ein Proband pro Trinkgelegenheit eine bestimmte Anzahl konsumierter alkoholhaltiger Getränke überschreitet. Der Schwellenwert schwankt hierbei zusätzlich von Land zu Land, sodass zum Beispiel in deutschen Studien fünf oder mehr alkoholhaltige Getränke pro Trinkgelegenheit als starker Konsum gelten, in Slowenien hingegen geschlechterspezifische Werte von vier oder mehr Getränken bei Frauen und sechs oder mehr Getränken bei Männern eingesetzt werden (RARHA 2016; Bloomfield et al., 2013). Ein Indikator für schädlichen Alkoholkonsum ist die durchschnittliche Trinkmenge pro Tag (Bloomfield et al., 2013). Auf Basis dieser Trinkmenge wird schädlicher Konsum definiert, indem ein Schwellenwert festgelegt wird, zum Beispiel >20/>40 Gramm (Männer/Frauen) Reinalkohol pro Tag (English et al., 1995). Als starker Raucher wird in epidemiologischen

Studien typischerweise eine Person bezeichnet, die mindestens 20 Zigaretten pro Tag raucht (Qian et al. 2010). Hinsichtlich anderer Substanzen wie Medikamente oder Cannabis lässt sich mangels existierender Studien keine eindeutige Konvention für Definitionen von starkem Konsum auslesen, wenngleich sich die Tendenz abzeichnet, den wöchentlichen Konsum als Messgröße für starken Konsum zu verwenden (Piontek et al., 2017).

Vor diesem Hintergrund sollte deutlich geworden sein, dass die sozioökonomische Ungleichheit beim Substanzmittelgebrauch in vielerlei Weisen epidemiologisch analysiert werden kann – und Ergebnisse maßgeblich davon abzuhängen scheinen, wie der Zusammenhang konzeptualisiert bzw. operationalisiert wurde. Studien, die mehrere Messgrößen für den Gebrauch von unterschiedlichen Substanzen nach unterschiedlichen Indikatoren des sozioökonomischen Status stratifizieren, fehlen bisweilen jedoch. Um ein klareres Bild zu diesem komplexen Zusammenhang zu bekommen, wäre es hilfreich, mehrere Substanzen nach unterschiedlichen Indikatoren des sozioökonomischen Status zu stratifizieren – und das auf Basis von ein und demselben Datensatz.

1.2 Potenzielle Ursachen für sozioökonomische Ungleichheit beim Substanzmittelgebrauch

Neben dem hohen Klärungsbedarf zur Beschaffenheit des sozialen Gradienten beim Substanzmittelgebrauch ist die Exploration möglicher Ursachen der sozialen Unterschiede von hoher Relevanz für die Ableitung präventiver und intervenierender Handlungen. Einschlägige Studienergebnisse hierzu fehlen jedoch.

Die Ursachen-Forschung zur sozioökonomischen Ungleichheit bei Morbidität und Mortalität ist deutlich weiter fortgeschritten und könnte als Ausgangspunkt für die noch unzulänglich erforschte Ungleichheit beim Substanzkonsum dienen. Grundsätzlich werden dabei materialistische/soziale Determinanten und Lifestyle/verhaltensbezogene Determinanten als potenzielle Ursachen für gesundheitliche Ungleichheit in Betracht gezogen (Townsend &

Davidson, 1982). Einerseits wird vermutet, dass Personen mit hohem sozioökonomischem Status gegenüber Personen mit niedrigerem sozioökonomischem Status hinsichtlich Qualität der Gesundheitsversorgung, Gefahren am Arbeitsplatz, Wohnsituation oder sozialem Support über privilegierte materialistische/soziale Möglichkeiten verfügen – woraus schließlich ein besserer Gesundheitszustand resultiert. Andererseits könnte sozioökonomische Ungleichheit auch die Folge des Lebensstils oder von bestimmten gesundheitsrelevanten Verhaltensweisen wie Ernährung, Trinkmuster, Rauchen oder sportliche Aktivität sein. In der Literatur wird insbesondere dem zuletzt genannten Ansatz große Bedeutung beigemessen, da materielle/soziale Faktoren wie beispielsweise Einkommen nur schwer zu verbessern sind, während eine Änderung des Lebensstils vergleichsweise einfach und kurzfristig umsetzbar sein kann (Thrane, 2006).

Bei diesem klassischen Modell der gesundheitlichen Ungleichheit werden materialistische/soziale und verhaltensbezogene Faktoren als mediierende Glieder zwischen sozioökonomischem Status und Gesundheit betrachtet. Substanzmittelgebrauch wie Tabakkonsum zählt als gesundheitsrelevantes Verhalten und agiert dabei als vermittelnde Variable, die den Gesundheitszustand einer Person (negativ oder positiv) beeinträchtigen kann. An erster Position der kausalen Verkettung steht der sozioökonomische Status, während der Gesundheitszustand das finale Outcome darstellt (Room, 2004). Beispielsweise kann eine fehlende berufliche Beschäftigung einen erhöhten Alkoholkonsum begünstigen, was wiederum negative Auswirkungen auf den Gesundheitszustand haben kann.

Diese kausale Reihenfolge bei gesundheitlicher Ungleichheit ließe sich theoretisch aber auch umstrukturieren. Bezieht man neben der körperlichen auch die psychische Gesundheit mit ein, kann der ursprüngliche Mediator Substanzmittelgebrauch auch als finales Outcome in der Kausalkette betrachtet werden (Room, 2004). Das würde bedeuten, dass der Gesundheitszustand nicht Endpunkt in der Kausalkette ist, sondern als Mediator zwischen sozioökonomischem Status und Substanzmittelgebrauch agiert (Abb. 1). Gut illustrieren lässt

sich diese These am Beispiel des Gebrauchs von Medikamenten. Vorausgesetzt, dass der sozioökonomische Status ein starker Prädiktor für den Gesundheitszustand ist (z.B. Mackenbach, 2006; Mielck, 2005), und dass ein schlechter Gesundheitszustand zu erhöhtem Medikamentengebrauch führt (z.B. Knopf & Melchert, 2003; Holstein et al., 2008; Rosholm & Christensen, 1997; Bath, 1999), so lässt sich im Umkehrschluss folgern, dass der Gesundheitszustand als Mediator zwischen sozioökonomischem Status und Medikamentengebrauch wirkt. Diese These unterstützend wurde in Studien gezeigt, dass sich der starke Zusammenhang zwischen sozioökonomischem Status und Medikamentengebrauch unter Einbezug des Gesundheitszustands auflöst (z.B. Furu et al., 1997). Wenn also ein niedriger sozioökonomischer Status das Risiko für einen schlechten Gesundheitszustand erhöht, kann dies wiederum einen erhöhten Gebrauch von Medikamenten nach sich ziehen.

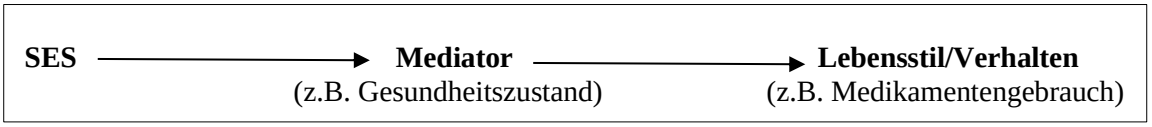

Abb. 1: Mögliche kausale Verkettung von sozioökonomischem Status (SES), Gesundheit und Substanzmittelgebrauch

1.3 Untersuchte Forschungsfragen

Vor diesem Hintergrund lässt sich feststellen, dass der Zusammenhang von sozioökonomischem Status und Substanzmittelgebrauch noch viele ungeklärte Fragen in sich birgt. So herrscht zum einen Unklarheit darüber, wie sich die Ausrichtung des sozialen Gradienten in Abhängigkeit von der betrachteten Substanz und dessen Operationalisierung verhält (Forschungsfrage 1). Auf der anderen Seite legen fehlende Erklärungsversuche in der Literatur nahe, die kausale Verkettung von sozioökonomischem Status und Substanzmittelgebrauch tiefgehender zu ergründen (Forschungsfrage 2). Die Untersuchung dieser Forschungsfragen kann einen wichtigen Beitrag leisten, den komplexen Zusammenhang

von sozioökonomischem Status und Substanzmittelgebrauch besser zu verstehen – und folglich eine Grundlage für die Politik liefern, Präventions- und Interventionsmaßnahmen noch besser zu gestalten.

Wie in Kapitel 1.1 deutlich wurde, kann die sozioökonomische Ungleichheit beim Substanzmittelgebrauch in vielerlei Weisen wissenschaftlich analysiert werden, und Studienergebnisse scheinen davon abzuhängen, wie der Zusammenhang operationalisiert wurde. Hinzu kommt die Verwendung unterschiedlicher Datengrundlagen in den Studien, was ebenso verantwortlich für ein Zustandekommen kontroverser Ergebnisse sein könnte. Um nun herauszufinden, ob die kontroversen Ergebnisse auf unterschiedliche Konzeptualisierungen – und eben nicht auf unterschiedliche Datensätze – zurückzuführen sind, wäre es hilfreich, mehrere Substanzen nach unterschiedlichen Indikatoren des sozioökonomischen Status zu stratifizieren – und das auf Basis des gleichen Datensatzes. Auf diese Weise wäre ein möglicher Einfluss der Datengrundlage eliminiert und eventuelle gegensätzliche soziale Gradienten auf die Konzeptualisierung der Substanz zurückzuführen. In einem explorativen, vergleichenden Ansatz wurden zur Bearbeitung der ersten Forschungsfrage daher Messgrößen für allgemeinen und starken Gebrauch von vier psychoaktiven Substanzen (Tabak, Alkohol, Cannabis und Schmerzmittel) nach drei häufig in Studien verwendeten Indikatoren für Berufsprestige (Erwerbstätigkeitstatus, beruflicher Status, berufliche soziale Klasse) stratifiziert. Da die existierenden Studienergebnisse beim Indikator Berufsprestige besonders kontrovers erscheinen und sich die Operationalisierung hier am komplexesten gestaltet, wurde dieser für die Analyse ausgewählt.

Die zweite Forschungsfrage beschäftigt sich mit der Exploration der kausalen Verkettung beim Zusammenhang von sozioökonomischem Status und Substanzmittelgebrauch. Hierzu wurde im zweiten Teil der vorliegenden Dissertation das in Kapitel 1.2 beschriebene Kausalmodell beispielhaft auf die Assoziation von sozioökonomischem Status und Medikamentengebrauch angewendet. Sogenannte Strukturgleichungsmodelle eignen sich (im

Gegensatz zu standardmäßigen Regressionsanalysen) gut zur statistischen Überprüfung solcher kausalen Zusammenhänge. Im Speziellen wurden in einer kausalen Pfadanalyse – eine Spezialform aus der Gruppe der Strukturgleichungsmodelle – direkte und indirekte Pfade vom sozioökonomischen Status zum Gebrauch der zwei in Deutschland am häufigsten eingenommenen Medikamentengruppen – nämlich Schmerz- und Beruhigungsmittel (Pabst et al., 2013) – statistisch überprüft, wobei die körperliche und psychische subjektive Gesundheit als mögliche Mediatoren zwischen sozioökonomischem Status und Medikamentengebrauch ins Modell einflossen. Es wurde vermutet, dass ein niedrigerer Medikamentengebrauch bei Personen mit hohem sozioökonomischem Status (gegenüber einem hohen Gebrauch bei Personen mit niedrigem sozioökonomischem Status) auf deren besseren Gesundheitszustand zurückzuführen ist. Da die Wahl des konsumierten Medikaments stark von den subjektiven Beschwerden abhängt (körperliche versus psychische Symptome) sowie von der Wirkung des Medikaments, wurde außerdem überprüft, ob ein schlechter körperlicher Gesundheitszustand eher zum Gebrauch von Schmerzmitteln führt, während ein schlechter psychischer Gesundheitszustand eher zum Gebrauch von Beruhigungsmitteln führen sollte. Falls sich dabei zeigt, dass Medikamentengebrauch in erster Linie vom Gesundheitszustand verursacht wird, sollten sich Maßnahmen zur Reduzierung des Medikamentengebrauchs speziell auf die Verbesserung des Gesundheitszustands selbst konzentrieren, mit Fokus auf einen durchschnittlich schlechteren Gesundheitszustand in benachteiligten sozialen Gruppen. Falls sich hingegen zeigt, dass es nicht der Gesundheitszustand ist, der hauptsächlich für den Medikamentengebrauch verantwortlich ist, wäre dies ein Hinweis darauf, dass unbekannte dritte Faktoren direkten Einfluss auf den Medikamentengebrauch haben, welche erst erforscht werden müssten.

Der deutsche epidemiologische Suchtsurvey (ESA) 2012 ist ein bevölkerungsrepräsentativer Datensatz, der sich gut für die Überprüfung beider Forschungsfragen eignet. Das Studiensample des ESA 2012 wurde aus der 18- bis 64-jährigen,

deutsch-sprechenden und in einem Privathaushalt lebenden Bevölkerung gezogen und besitzt eine Gesamtstichprobengröße von n=9.084 Studienteilnehmern (Rücklaufquote: 53,6 %). Sämtliche Analysen wurden geschlechterstratifiziert durchgeführt.

Ergebnisse zur ersten Forschungsfrage wurden am 12. Oktober 2015 in der Fachzeitschrift „Addiction Research & Theory“ (Verlag: Taylor & Francis) veröffentlicht. Ergebnisse zur zweiten Forschungsfrage wurden am 13. Februar 2019 in der Fachzeitschrift „Public Health“ (Verlag: Elsevier) publiziert.

Der Beitrag des Autors lag in beiden Studien in der Entwicklung der Fragestellung, der Datenaufbereitung, der statistischen Datenauswertung sowie der Konzeptionierung und Anfertigung der Publikation.

2 Publikationen

2.1 Occupational inequalities in psychoactive substance use: A question of conceptualization?

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Original research paper

Occupational inequalities in psychoactive substance use: A question of conceptualization?

Running head: *Occupational inequalities in psychoactive substance use*

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Abstract

Background: Three different conceptualizations of occupational prestige were contrasted by applying social stratification to four exemplarily selected psychoactive substances. Although these conceptualizations partly measure the same construct, it is hypothesized that the gradient of occupational inequality differs depending on the type of conceptualization.

Method: Data were taken from the 2012 German Epidemiological Survey of Substance Abuse. The study sample comprised n=9084 individuals of the general population aged 18 to 64 years. Use and heavy use of cigarettes, alcohol, cannabis, and analgesics were stratified by (a) employment status (six groups: employed, marginally employed, apprenticeship, unemployed, retired, other), (b) occupational status (five groups: low to high), and (c) occupational social class (two groups: blue-collar, white-collar). Absolute and relative differences between occupational groups were calculated. All analyses were stratified by gender.

Results: Risk for smoking was increased among unemployed males and blue-collar workers. Retired persons, people with low occupational status and female blue-collar workers had a diminished risk for alcohol consumption; apprentices had an increased risk. Among males, low occupational status and blue-collar work was associated with episodic heavy drinking. Unemployment and blue-collar work was related to cannabis use. Risk for heavy analgesics use was increased among unemployed women, men with low occupational status and male blue-collar workers, respectively.

Conclusions: The results suggest that occupational inequality differs depending on the applied conceptualizations of occupational prestige. Consequently, they should not be used interchangeably.

Introduction

It is well known that social inequalities in health exist between countries, as well as within a specific country or society (Mielck, 2005; Mackenbach et al., 2008). When those inequalities are described in the literature, two different theoretical orientations can be distinguished. Social class is the means of choice when approaching inequality in a sociological manner. Based on the Marxian stratum model of class, society is divided into a simple hierarchy of working class, middle class and upper class, referring to an individual's relatively stable sociocultural background (Weber, 1972; Serravallo, 2008). On the contrary, when approaching inequalities in an epidemiological manner, it is more likely referring to someone's current social and economic situation. This so-called socioeconomic status (SES) is more changeable over time and ignores the subjective aspect of social class (Demakakos, Nazroo, Breeze, & Marmot, 2008; Rubin et al., 2014).

Regardless of which of these approaches is applied (sociological or epidemiological), it would be assumed that conceptual clarity exists within each. However, regarding the epidemiological approach, a broad range of indicators for social stratification is used in the literature, e.g. education, income or occupational prestige. The lack of a consensus on a theory behind each of these concepts leads to an even broader range of different conceptualizations. Especially with regard to occupational prestige, the diversity is large (Oakes & Rossi, 2003; Galobardes, Shaw, Lawlor, Lynch, & Davey Smith, 2006).

According to the global health risks report by the World Health Organization (2009), the use of psychoactive substances is one of the most preventable risk factors for health. When investigating inequalities in substance use by occupational prestige, at least three different indicators are used in relevant studies: employment status, occupational status, or occupational social class. The concept of employment status commonly compares the current state of economic activity of an individual, i.e. employed versus unemployed (Henkel, 2011).

Occupational status is based on a hierarchical structure reflecting someone's occupational position (Lampert & Kroll, 2009; Hoffmeyer-Zlotnik & Warner, 2012). Depending on whether the level of autonomy and responsibility in someone's job is high (e.g. academic freelancer) or low (e.g. unskilled worker), the person is assigned to a high or low occupational status. Particularly U.K. studies frequently use an indicator called occupational social class. Focusing on differences between blue-collar and white-collar workers, this differentiation is generally based on binary categories such as manual vs. non-manual labour, as well as multiple categories like professionals vs. managers vs. non-manual workers vs. manual workers are possible (Mäkelä, Herttua, & Martikainen, 2015).

The link between these concepts is their intention to measure parts of the same construct "occupational prestige". However, a brief look into the literature shows that studies on occupational inequalities in psychoactive substance use partly produce opposing findings depending on their conceptualization of "occupational prestige". For instance, concerning smoking, several studies showed a negative social gradient when using occupational social class (Hotchkiss et al., 2011; Laaksonen, Rahkonen, Karvonen, & Lahelma, 2005; Pekkanen, Tuomilehto, Uutela, Vartiainen, & Nissinen, 1995). On the contrary, Lampert & Ziese (2005) could not identify any significant difference in smoking between unemployed and employed women, and Santos et al. (2004) report a higher prevalence among female employees compared to women without work. Nevertheless, a recent German study suggests that smoking is appreciably more widespread among unemployed compared to employed individuals (Institut für Arbeitsmarkt- und Berufsforschung der Bundesagentur für Arbeit, 2014). Similarly, Lampert (2010) detected a negative social gradient for occupational status (the lower the occupational status, the higher the risk for smoking).

An even greater variation in results can be observed regarding alcohol consumption. In Germany, regular drinking seems to be more widespread among the employed population (Institut für Arbeitsmarkt- und Berufsforschung der Bundesagentur für Arbeit, 2014;

Bloomfield, 1998). However, a comprehensive review showed a tendency of higher prevalence of heavy drinking among the unemployed population (Henkel, 2011). An increased prevalence of binge drinking has been found among unemployed men, but not among women (San José, van Oers, van de Mheen, Garretsen, & Mackenbach, 2000; Henkel, 2000). McFadden et al. (2009) reported a positive social gradient for weekly alcohol intake from professionals to unskilled workers among females, while Hotchkiss et al. (2011) reported a negative gradient for exceeding recommended weekly drinking limits.

The association between occupational prestige and the use of other substances like cannabis or pharmaceuticals has been examined far less. However, the existing studies also yielded controversial results (Sandwijk, Cohen, & Langemeijer, 1995; Legleye, Beck, Khlat, Peretti-Watel, & Chau, 2012; Kipping, Smith, Heron, Hickman, & Campbell, 2015; Alonso et al., 2004; Grinshpoon, Marom, Weizman, & Ponizovsky, 2007; Australian Institute of Health and Welfare, 1998).

There are at least two conceivable hypotheses as to why studies are yielding inconsistent results depending on the applied occupational indicator. Hypothesis 1 suggests that the discrepancies are attributable to different settings of the studies, i.e. different datasets, countries, cultures, etc. Hypothesis 2 rather ascribes internal differences, i.e. these discrepancies might exist due to different conceptualizations of the indicators; and although they all intend to measure parts of the same construct, they produce different study results. This would imply that the different conceptualizations should be strictly distinguished from each other and cannot be used interchangeably.

To get a clearer picture of this complex relation, it is useful to stratify a range of substances by different occupational indicators based on a single dataset. Thus, ruling out influences of different study settings and testing conceptual differences of indicators only. A large representative sample of the German adult population was used to test these hypotheses in an explorative manner by conducting a comparative assessment considering use and heavy use of

four exemplarily selected psychoactive substances (cigarettes, alcohol, cannabis, and analgesics), stratified by three most commonly applied indicators of occupational prestige (employment status, occupational status, and occupational social class).

Methods

Study design and sample

The data used was of the 2012 German Epidemiological Survey of Substance Abuse (ESA). Based on a cross-sectional design, the study sample was drawn from the 18 to 64 years old German-speaking population living in private households. A two-stage sampling approach with oversampling younger birth cohorts was used. Data collection was conducted from April to August 2012 using a mixed-mode design (PAPI, CATI, online questionnaires). The final study sample comprises n=9084 individuals (response rate: 53.6%). The mean (SD) age of the sample was 39.8 (14.9) years; 50.8% were male. Details on design and methods can be found elsewhere (Kraus, Piontek, Pabst, & Gomes de Matos, 2013).

Outcome variables

Outcomes were the prevalence of use and heavy use of cigarettes, alcohol, cannabis and analgesics. 30-day prevalence of cigarette smoking and heavy smoking (at least 20 cigarettes per day) were based on the questions “During the last 30 days, on how many days did you smoke cigarettes?” and “On a day you smoke cigarettes, how many cigarettes do you smoke on average?”.

30-day prevalence of alcohol consumption was assessed by asking “During the last 30 days, on how many days did you drink beer/wine/spirits/mixed alcoholic beverages?”. 30-day prevalence of episodic heavy drinking (EHD) was assessed by asking “On how many days within the last 30 days did you drink 5 or more glasses of alcohol, irrespective of whether it was beer, wine, spirits, or alcoholic mixed drinks?”.

12-month prevalence of cannabis consumption was assessed by asking “When did you last consume cannabis (hashish, marijuana)?” and “During the last 12 months, how often did you consume cannabis (hashish, marijuana)?”. Individuals indicating cannabis use within the last 12 months in any of these questions were assigned to cannabis users. Due to small sample sizes, we refrained from analysing heavy cannabis consumption.

The question on the use of analgesics read “During the last 30 days, how often did you use analgesics (painkillers)?”. The proportion of individuals who used analgesics at least once in the last 30 days and at least once a week in the last 30 days were used for prevalence of use and heavy use.

Predictor variables

Three occupational indicators were used for social stratification: (a) employment status, (b) occupational status, and (c) occupational social class. To determine the current employment status of a respondent, six groups were distinguished: “employed” (full or part time), “marginally employed” (marginally employed, semi-retirement, 1-Euro-job, occasionally/irregularly employed), “apprenticeship” (apprentices, pupils, students), “unemployed”, “retired”, “other” (military/civilian service, voluntary service, retraining, unemployable, homemaker).

Regarding occupational status, respondents were categorized in 5 groups: “low” (unskilled, semi-skilled workers), “simple” (skilled workers, employees with executive activity by general instruction, officials in lower service), “intermediate” (foremen/group leaders, employees with skilled activities by general instruction, officials in intermediate service, accessory family members), “upper” (craftsmen/brigadiers, employees with autonomous activities/responsibility for staff, officials in upper service, self-employed individuals), “high” (academic freelancers, employees with comprehensive executive function, officials in higher service). Economically

inactive individuals reported their last occupational status. Persons in apprenticeship were excluded from the analyses.

Occupational social class was used to distinguish manual and non-manual backgrounds: Blue-collar workers (unskilled, semiskilled, skilled workers, foremen/group leaders, craftsmen/brigadiers, self-employed individuals), and white-collar workers (all types of employees, officials, academic freelancers). The linkage between occupational social class and occupational status is illustrated in Figure 1.

To control for confounding effects, additional predictor variables were included in the analyses: age (continuous), marital status (married, unmarried), income (net per capita household income; quintiles), educational qualification (four groups based on the International Standard Classification of Education), regional distribution (West Germany, East Germany), interview mode (CATI, PAPI, online questionnaire). The adjustment for income and education was conducted in order to achieve net effects of occupational indicators without running the risk of confounding.

>>> Figure 1 <<<

Statistical analyses

To quantify inequalities between occupational groups, absolute and relative differences were calculated (Mackenbach & Kunst, 1997). Absolute differences are illustrated by the prevalence of each outcome, stratified by gender and occupational indicators. To quantify relative differences, odds ratios (OR) and 95% confidence intervals (95% CI) were computed applying binary logistic regressions. Analyses were conducted separately for each occupational indicator and were stratified by gender. “Employed”, “high occupational status” and “white-collar worker” was defined as reference category for the regression analyses, respectively. Data were weighted to represent the distribution of age, gender, and education in the German general population. In order to adjust for the stratified design of the survey, standard errors were

calculated based on Taylor series in all analyses (for more information see West, Berglund & Heeringa, 2008). Statistical analyses were carried out with Stata 12.1 SE (Stata Corp LP, College Station, TX).

Results

Sample description

Table 1 shows the characteristics of the study sample. Every third man and every fourth woman had smoked at least once in the last month. Among smokers, 35% of men and 21% of women were classified as heavy smokers. Overall, 77% of men and 66% of women had drunk alcohol at least once in the last month; among drinkers, 47% of men and 22% of women reported at least one episode of heavy drinking. Prevalence of cannabis use was 6% for men and 3% for women. Use of analgesics was more frequently reported by women (56%) compared to men (40%); prevalence of weekly use was similar in both sexes (37%, 40%). Less than 5% of men and women reported unemployment; 38% of men and 26% of women had an upper or high occupational status. Women were more frequently employed as white-collar worker (70%); 78% of men and 66% of women were employed in full or part time jobs.

>>> Table 1 <<<

Cigarette smoking

Table 2 displays occupational inequalities in cigarette smoking and heavy smoking. Among apprentices and marginally employed males and females, risk for smoking was significantly reduced. Unemployed men showed an increased risk for smoking, whereas retired women exhibited a decreased risk. Men with a blue-collar job had an increased risk for smoking compared to white-collar workers. Concerning heavy smoking, group differences were only significant for employment status, with a decreased risk among male apprentices and marginally employed persons.

>>> Table 2 <<<

Alcohol consumption

Occupational inequalities in alcohol consumption and EHD are summarized in Table 3. Regarding employment status, apprentices had an increased risk drinking, whereas there was a decreased risk among retired persons. Risk for drinking was significantly diminished among people with simple and low occupational status compared to people with high occupational status. Prevalence was lower for female blue- compared to white-collar workers. Even though the prevalence of EHD was higher for apprentices and male unemployed individuals, no significant differences between the different types of employment status were found. Prevalence and risk of EHD increased with lower occupational status among men, whereas no significant differences were observed for women. Male blue-collar workers had a higher risk for EHD compared to their white-collar counterparts.

>>> Table 3 <<<

Cannabis use

Occupational inequalities in cannabis use are represented in Table 4. Among males, unemployed individuals and blue-collar workers showed a significantly higher risk for consuming cannabis compared to employees and white-collar workers, respectively. In contrast, women with simple occupational status had a decreased risk for using cannabis compared to those with high occupational status.

>>> Table 4 <<<

Analgesics use

Table 5 summarizes occupational inequalities in monthly and weekly analgesics use. Prevalence and risk for having used analgesics at least once in the last month were comparable

across the different types of occupational status and occupational social class among both sexes. Male and female apprentices showed significantly decreased 30-day prevalence compared to employed individuals. The risk for weekly analgesics use was increased for unemployed women and male blue-collar workers. Men with simple and low occupational status showed an increased risk for using analgesics at least once a week compared to males with high occupational status.

>>> Table 5 <<<

Discussion

In this study, we contrasted different conceptualizations of occupational prestige concerning the use of psychoactive substances. Inconsistent findings encountered in the literature and a lacking theoretical background raised the question whether results concerning occupational inequality depend on how "occupational prestige" is conceptualized. As an empirical test, social stratification of three commonly used indicators of occupational prestige (employment status, occupational status, occupational social class) was applied to four exemplarily selected psychoactive substances (cigarettes, alcohol, cannabis, analgesics).

The results of the study suggest that statements on occupational inequalities in substance use largely depend on the applied conceptualization of occupational prestige. For instance, we did not find any association between smoking and occupational status, whereas the indicators of employment status and occupational social class suggest a gender-specific increased risk for people in disadvantaged occupational situations (unemployed, blue-collar; s. Table 2). Concerning alcohol consumption, applying occupational status or occupational social class produced significant differences in the risk for EHD among males, but not when employment status was used (s. Table 3). In contrast, among males, significant differences in the risk for cannabis use were found for unemployed and blue-collar workers, but occupational status did not yield any social gradient (s. Table 4). Moreover, the risk for weekly analgesics use was

increased among unemployed females, whereas no social gradient could be observed regarding occupational status or occupational social class (reverse findings for males; s. Table 5).

Our assumption was that these variations in the direction of occupational inequality are due to different conceptualizations of the indicators. Despite intending to measure the same construct, occupational indicators are based on two fundamentally different modes of thought: hierarchical vs. non-hierarchical. Occupational status follows an intuitive hierarchical structure by describing the level of autonomy in someone's job (low to high), while employment status (unemployed vs. employed) and occupational social class (manual vs. non-manual work) are based on a non-hierarchical distinction. It is conceivable, for instance, that a foreman who is assigned to blue-collar workers has more responsibility and autonomy compared to a white-collar employee with simple executive activity (e.g. shop assistant or stenotypist). In addition to that, employment status reflects the current situation of a person, while occupational status or occupational social class also considers the previous occupational activity if the respondent was currently economically inactive. Even if all occupational indicators intend to measure parts of the same construct "occupational prestige", they are apparently based on different concepts, and, as a consequence, measure different things. Therefore, our results imply a strict distinction of different occupational indicators, and suggest considering each indicator by itself instead of generalizing them to "occupational prestige" or even "SES".

Apart from the main focus of this study, it is also noteworthy that the directions of inequality are not similarly aligned for each substance. For instance, we observed an increased risk for alcohol consumption among apprentices, but their risk for smoking and analgesics use was diminished. Moreover, there was a decreased risk for alcohol consumption among female blue-collar workers, while no inequalities were found regarding the other substances. Among males, unemployment was only associated with smoking and cannabis use, but not with alcohol or analgesics use. These variations between substances might be partly due to different socio-political regulations and different images of specific substances in the German society.

Systematic tobacco control policies, such as tax increases or smoking bans were implemented in the 1990s (Deutsches Krebsforschungszentrum, 2014) and may have led to decreased availability and a change in the substance use culture. Hence, smoking prevalence has largely decreased, especially among adolescents and young adults (Bundeszentrale für gesundheitliche Aufklärung, 2009). In contrast, there were hardly any changes in legal regulations concerning alcohol and cannabis in recent years. As an exception, Germany implemented an alcopops tax in 2004 which resulted in a two-fold price increase. Contrary to the intention of the tax, overall alcohol consumption amongst young people did not change, as alcopops were mostly substituted by spirits (Müller, Piontek, Pabst, Baumeister, & Kraus, 2010). Moreover, comprehensive prevention campaigns targeting alcohol consumption were implemented only recently and have obviously not yielded a sufficient effect on availability.

Another conspicuous pattern was found with regard to alcohol consumption and occupational status. The risk for alcohol use was decreased among males with low occupational status, while the risk for EHD was increased in this group. A similar tendency could be observed for occupational social class. Other European studies yielded comparable patterns (Hotchkiss et al., 2011; Institut für Arbeitsmarkt- und Berufsforschung der Bundesagentur für Arbeit, 2014; Henkel, 2000; McFadden, Luben, Wareham, Bingham, & Khaw, 2009), equally by considering educational inequalities (Mackenbach et al., 2008; Casswell, Pledger, & Hooper, 2003; Huckle, You, & Casswell, 2010; van Oers, Bongers, van de Goor, & Garretsen, 1999).

In addition, several high-risk groups could be identified. First, male blue-collar workers had an increased risk for cigarette smoking, EHD, and weekly analgesics use. Especially with regard to legal substance use, manual workers may still have more opportunities for consumption. For instance, smoking is prohibited in all public buildings and offices, whereas no regulations exist for smoking in outdoor working areas. Second, unemployment seems to be an important determinant for substance use, e.g. concerning cigarette smoking (males), cannabis use (males), and weekly analgesics use (females). This finding is corroborated by international studies

reporting unemployment as a major risk factor of substance use (Henkel, 2011; Sandwijk, Cohen, & Langemeijer, 1995; Australian Institute of Health and Welfare, 1998). It has been argued that individuals with lower socioeconomic status are less frequently exposed to prevention campaigns and have a poorer ability to process respective information (Niederdeppe, Fiore, Baker, & Smith, 2008).

Moreover, some tendencies were gender-specific. For instance, a social gradient in EHD was found for occupational status and occupational social class among males, but not among females. This is in accordance to other studies (Hotchkiss et al., 2011; Henkel, 2011; Mäkelä et al., 2006; Kuntsche et al., 2006). Furthermore, only unemployed females had an increased risk for weekly analgesics use. Different potential explanations for these gender differences have been discussed in the literature such as the gender composition of the work environment (Cho, 2004) or social norms (Arterberry, Smith, Martens, Cadigan, & Murphy, 2014; Eriksen, 1999; Bloomfield, Gmel, & Wilsnack, 2006).

Approaching possible explanations for the existence of occupational inequalities in heavy substance use in favour of advantaged occupational groups, theories of coping might be appropriate: Greiner (2001) assumes that health inequalities are caused by unequal work load (physical and psychological "stressors") on the one hand, and a lack of capabilities to cope with this work load on the other hand. Thus, high demands, stress and monotony at work with low remunerations (as it is common in blue-collar jobs) might lead to increased risks for substance use (Siegrist, 1996; Dawson, Grant, & Ruan, 2005). Similarly, the self-medication hypothesis by Khantzian (2003) could serve as explanation for high-risk consumption patterns among disadvantaged occupational groups. There is also evidence that short-term employment is associated with an increased risk for problematic alcohol and tobacco use as well as dependence (Legleye, Baumann, Peretti-Watel, & Chau, 2011). In this context, and with regard to our findings yielding an increased risk for alcohol and cannabis use among marginally employed males (results are close to significance; s. Table 3 and 4), it seems to be important to include

additional indicators of working conditions in the analyses (e.g. precariousness of job contract, physical and psychological workload, satisfaction in job, etc.). Since no such indicator was available in our data, we were not able to consider this aspect. Regarding 30-day prevalence of alcohol consumption and occupational status, a positive social gradient might be explained by the fact that less socially deprived groups are exposed to more drinking opportunities, have more resources to engage in it, and may also use it as a means of coping (Bloomfield, Augustin, & Kraus, 2000; Bloomfield, Gmel, Neve, & Mustonen, 2001). Findings from Arterberry et al. (2014) suggest that EHD is strongly affected by social norms and protective behavioral strategies.

The main benefit of our study results from the approach of a comparative assessment. Contrary to other studies ignoring the question whether different conceptualizations of occupational prestige are interchangeable or not, our approach enabled us to draw conclusions on this thesis by contrasting different occupational indicators on the basis of the same dataset. Additionally, by adjusting for education and income in the regression analysis, a confounding effect by other major components of SES was avoided: When we excluded education and income from the regression models, the effects of occupational indicators mostly strengthened, and the explained variance of the models was diminished (results not shown). Another advantage is the high quality of the underlying data source which is characterized by a large sample size and a standardized data collection method (Kraus, Piontek, Pabst, & Gomes de Matos, 2013).

However, our study is not without limitations. Despite a large total sample size, low case numbers due to rare outcomes (e.g. heavy smoking or cannabis use) and a stratification by predictor variables with five or six categories must partly be taken into account. This implies a reduction of statistical power so that an interpretation of the respective results should be made with caution. Nevertheless, we decided to report those results in order to contribute evidence in a poorly studied research area. When interpreting the results, it must be taken into account that

no conclusions can be drawn about causal relationships due to the cross-sectional study design. Underestimation of the real prevalence can be assumed because of self-reported data, even though similar effects can be expected in each occupational category.

Conclusions

In this study we have shown that employment status, occupational status and occupational social class are not interchangeable, even though all indicators intend to measure parts of the same construct "occupational prestige". Therefore, a strict distinction of the different conceptualizations is suggested. With regard to the epidemiological claim of this paper, we found that even though individuals in disadvantaged occupational situations (unemployed, low occupational status) have a lower prevalence of alcohol use, they seem to exhibit more problematic consumption patterns (EHD, cannabis use, weekly analgesics use). According to these findings, legal regulations as well as prevention campaigns should focus on targeting high-risk groups.

Declaration of interest

Ludwig Kraus and Daniela Piontek declare having received a grant from Lundbeck GmbH for a project on alcohol epidemiology unrelated to this study.

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Profession	Occupational status	Occupational social class
Unskilled worker	Low	Blue-collar
Semi-skilled worker	Low	Blue-collar
Skilled worker	Simple	Blue-collar
Employees with executive activity by general instruction or officials in lower service	Simple	White-collar
Employees with skilled activities by general instruction or officials in intermediate service	Intermediate	White-collar
Foreman/group leader	Intermediate	Blue-collar
Accessory family members	Intermediate	-
Craftsmen/brigardiers	Upper	Blue-collar
Employees with autonomous activities/responsibility for staff or officials in upper service	Upper	White-collar
Self-employed individuals (farming, trading, craft, gastronomy, service, industry, "You Inc.")	Upper	Blue-collar
Employees with comprehensive executive function or officials in higher service	High	White-collar
Academic freelancers	High	White-collar

Figure 1: Link between occupational status and occupational social class

Table 1: Characteristics of study sample

	Total		Men		Women	
	%	(n)[a]	%	(n)[a]	%	(n)[a]
	-	(9084)	50.8	(3929)	49.2	(5155)
Cigarette smoking (30-day prevalence)	29.4	(2234)	32.7	(1084)	26.0	(1159)
Heavy smoking (20+ cigarettes per day)[b]	29.0	(464)	35.2	(275)	21.1	(189)
Alcohol consumption (30-day prevalence)	71.6	(6501)	77.0	(3038)	65.9	(3463)
Episodic heavy drinking (5+ drinks per occasion, 30 days)[b]	35.5	(2275)	46.8	(1445)	21.9	(830)
Cannabis use (12-month prevalence)	4.5	(505)	6.0	(301)	3.0	(204)
Analgesics use (30-day prevalence)	47.9	(4259)	40.3	(1423)	55.6	(2836)
Weekly analgesics use[b]	38.6	(1491)	40.4	(530)	37.3	(961)
Employment status						
Employed (full/part time)	72.3	(5421)	77.8	(2593)	66.2	(2828)
Marginally employed	8.9	(893)	5.5	(291)	12.8	(602)
Apprenticeship	7.7	(1244)	7.7	(591)	7.8	(653)
Unemployed	3.4	(227)	4.0	(115)	2.8	(112)
Retired	4.4	(397)	4.2	(176)	4.7	(221)
Other	3.2	(327)	0.8	(42)	5.8	(285)
Occupational status						
High	5.3	(498)	5.7	(251)	4.9	(247)
Upper	26.8	(2112)	32.1	(1117)	21.1	(995)
Intermediate	24.5	(1896)	18.7	(586)	30.5	(1310)
Simple	31.0	(1820)	31.1	(784)	30.9	(1036)
Low	12.4	(680)	12.3	(293)	12.6	(387)
Occupational social class						
White-collar	59.3	(4660)	48.9	(1719)	70.3	(2941)
Blue-collar	40.7	(2295)	51.1	(1301)	29.7	(994)

a % = percent; n = number of cases; % is weighted; n is unweighted

b Refers to 30-day consumers

Table 2: Inequalities in cigarette smoking by occupational indicators and gender

	Cigarette smoking (30-day prevalence)								Heavy smoking (20+ cig. per day, past 30 days)[c]							
	Men				Women				Men				Women			
	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)	OR	(95% CI)[b]
Employment status																
Employed (full/part time)	32.0	(715)	1	(ref.)	28.2	(712)	1	(ref.)	36.8	(200)	1	(ref.)	20.3	(110)	1	(ref.)
Marginally employed	32.7	(78)	**0.65**	(0.44-0.96)	24.8	(126)	**0.68**	(0.50-0.93)	20.7	(9)	**0.35**	(0.15-0.83)	19.6	(18)	0.60	(0.29-1.24)
Apprenticeship	27.5	(140)	**0.36**	(0.26-0.49)	19.6	(120)	**0.34**	(0.24-0.47)	17.1	(12)	**0.34**	(0.12-0.95)	7.9	(9)	0.43	(0.15-1.24)
Unemployed	53.0	(50)	**1.64**	(1.01-2.68)	30.8	(27)	0.72	(0.41-1.30)	40.1	(21)	0.92	(0.45-1.89)	24.7	(8)	0.82	(0.25-2.67)
Retired	28.3	(47)	0.84	(0.52-1.35)	16.5	(29)	**0.48**	(0.30-0.79)	61.0	(23)	1.61	(0.67-3.85)	25.2	(6)	0.46	(0.14-1.50)
Other	47.0	(17)	1.02	(0.41-2.52)	14.8	(40)	0.44	(0.29-0.67)	0	-	1.00	-	10.6	(2)	0.67	(0.13- 3.32)
Occupational status																
High	23.4	(50)	1	(ref.)	19.8	(44)	1	(ref.)	20.0	(10)	1	(ref.)	14.8	(6)	1	(ref.)
Upper	26.6	(264)	1.01	(0.69-1.46)	25.0	(223)	1.15	(0.78-1.71)	34.7	(71)	1.72	(0.69-4.32)	19.3	(38)	1.43	(0.48-4.28)
Intermediate	28.2	(158)	0.83	(0.55-1.24)	22.2	(274)	0.87	(0.57-1.33)	28.7	(40)	1.40	(0.57-3.44)	19.5	(45)	1.31	(0.44-3.95)
Simple	34.2	(250)	0.89	(0.58-1.37)	29.7	(273)	0.98	(0.63-1.53)	38.4	(74)	1.61	(0.61-4.24)	18.8	(44)	1.11	(0.35-3.48)
Low	54.1	(132)	1.59	(0.96-2.65)	36.4	(124)	0.99	(0.59-1.66)	49.8	(53)	2.93	(0.98-8.73)	34.6	(32)	1.69	(0.42-6.72)
Occupational social class																
White-collar	25.8	(403)	1	(ref.)	23.7	(632)	1	(ref.)	30.4	(97)	1	(ref.)	19.3	(102)	1	(ref.)
Blue-collar	38.8	(447)	**1.36**	(1.09-1.71)	34.0	(297)	1.10	(0.88-1.38)	41.8	(149)	1.23	(0.84-1.98)	25.2	(62)	1.15	(0.70-1.90)

a % = percent; n = number of cases
b OR = odds ratio; CI = confidence interval; calculation via logistic regression; conducted separately for each occupational indicator; adjusted for age, marital status, income, educational qualification, regional distribution, and interview mode; significant values are printed in bold
c Heavy smoking refers to 30-day cigarette smokers

Table 3: Inequalities in alcohol consumption by occupational indicators and gender

	Alcohol consumption (30-day prevalence)								EHD (5+ drinks, past 30 days)[c]							
	Men				Women				Men				Women			
	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]
Employment status																
Employed (full/part time)	79.3	(2061)	1	(ref.)	70.7	(2010)	1	(ref.)	45.1	(901)	1	(ref.)	20.3	(416)	1	(ref.)
Marginally employed	80.2	(231)	1.54	(0.93-2.55)	62.7	(408)	0.95	(0.73-1.24)	50.6	(125)	1.10	(0.75-1.60)	25.1	(121)	1.17	(0.82-1.69)
Apprenticeship	78.3	(459)	**1.46**	(1.01-2.11)	70.9	(462)	**1.38**	(1.02-1.87)	62.1	(294)	0.90	(0.67-1.22)	41.3	(190)	1.00	(0.70-1.43)
Unemployed	68.0	(79)	1.12	(0.61-2.04)	55.3	(65)	0.74	(0.45-1.22)	56.8	(36)	1.37	(0.78-2.39)	21.5	(15)	0.98	(0.49-1.96)
Retired	60.8	(110)	**0.47**	(0.30-0.74)	55.3	(128)	**0.59**	(0.41-0.84)	30.0	(39)	0.78	(0.45-1.38)	13.0	(16)	1.30	(0.68-2.48)
Other	64.1	(29)	0.46	(0.14-1.49)	49.1	(143)	**0.46**	(0.33-0.65)	70.6	(19)	1.55	(0.49-4.86)	16.6	(29)	0.64	(0.38-1.08)
Occupational status																
High	89.3	(218)	1	(ref.)	77.5	(190)	1	(ref.)	31.5	(65)	1	(ref.)	18.0	(30)	1	(ref.)
Upper	84.1	(923)	0.72	(0.42-1.22)	73.2	(720)	0.77	(0.52-1.15)	41.0	(368)	1.41	(0.99-2.00)	18.3	(128)	0.86	(0.52-1.45)
Intermediate	81.1	(475)	0.65	(0.37-1.15)	73.1	(945)	0.89	(0.59-1.33)	44.7	(214)	**1.63**	(1.10-2.42)	18.6	(182)	0.82	(0.48-1.42)
Simple	70.7	(552)	**0.43**	(0.25-0.76)	61.2	(631)	**0.61**	(0.40-0.93)	51.4	(284)	**1.98**	(1.27-3.08)	22.1	(148)	0.90	(0.50-1.63)
Low	67.4	(197)	**0.54**	(0.29-0.99)	47.3	(193)	**0.49**	(0.23-0.81)	55.8	(107)	**1.92**	(1.17-3.16)	21.7	(41)	0.85	(0.43-1.66)
Occupational social class																
White-collar	82.4	(1413)	1	(ref.)	70.8	(2079)	1	(ref.)	40.5	(565)	1	(ref.)	20.0	(409)	1	(ref.)
Blue-collar	73.1	(944)	0.87	(0.66-1.14)	56.4	(574)	**0.74**	(0.60-0.92)	51.1	(468)	**1.40**	(1.11-1.76)	19.5	(116)	0.78	(0.59-1.03)

a % = percent; n = number of cases
b OR = odds ratio; CI = confidence interval; calculation via logistic regression; conducted separately for each occupational indicator; adjusted for age, marital status, income, educational qualification, regional distribution, and interview mode; significant values are printed in bold
c Episodic heavy drinking refers to 30-day alcohol consumers

Table 4: Inequalities in cannabis use by occupational indicators and gender

	Cannabis use (12-month prevalence)							
	Men				Women			
	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]
Employment status								
Employed (full/part time)	4.0	(115)	1	(ref.)	2.3	(74)	1	(ref.)
Marginally employed	10.2	(43)	1.70	(0.98-2.95)	4.0	(35)	1.18	(0.60-2.31)
Apprenticeship	17.3	(104)	1.12	(0.70-1.80)	11.5	(71)	1.08	(0.60-1.93)
Unemployed	19.1	(19)	**4.47**	(2.11-9.45)	2.9	(3)	0.76	(0.14-4.04)
Retired	1.5	(1)	1.36	(0.18-10.09)	0.0	(0)	1.00	-
Other	19.3	(8)	1.40	(0.25-7.98)	3.3	(13)	1.05	(0.47-2.34)
Occupational status								
High	3.8	(7)	1	(ref.)	2.7	(5)	1	(ref.)
Upper	3.8	(43)	1.20	(0.46-3.14)	1.0	(23)	0.95	(0.33-2.70)
Intermediate	3.0	(24)	0.86	(0.32-2.34)	2.0	(25)	0.93	(0.33-2.63)
Simple	4.3	(37)	1.14	(0.38-3.42)	2.3	(17)	**0.29**	(0.09-0.91)
Low	9.9	(33)	1.86	(0.55-6.35)	2.1	(16)	0.79	(0.22-2.88)
Occupational social class								
White-collar	3.3	(62)	1	(ref.)	1.6	(54)	1	(ref.)
Blue-collar	5.7	(78)	**1.82**	(1.10-3.03)	2.3	(30)	1.08	(0.56-2.10)

a % = percent; n = number of cases

b OR = odds ratio; CI = confidence interval; calculation via logistic regression; conducted separately for each occupational indicator; adjusted for age, marital status, income, educational qualification, regional distribution, and interview mode; significant values are printed in bold

Table 5: Inequalities in analgesics use by occupational indicators and gender

	Analgesics use (30-day prevalence)								Weekly analgesics use (past 30 days)[c]							
	Men				Women				Men				Women			
	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]	%	(n)[a]	OR	(95% CI)[b]
Employment status																
Employed (full/part time)	40.6	(976)	1	(ref.)	58.0	(1620)	1	(ref.)	38.4	(352)	1	(ref.)	34.6	(527)	1	(ref.)
Marginally employed	38.3	(94)	0.97	(0.68-1.37)	53.8	(314)	0.81	(0.63-1.03)	48.3	(39)	1.12	(0.63-2.00)	36.4	(102)	0.91	(0.64-1.30)
Apprenticeship	32.4	(185)	**0.66**	(0.47-0.91)	59.5	(386)	**0.74**	(0.56-0.99)	32.7	(55)	0.98	(0.58-1.68)	25.8	(101)	0.97	(0.66-1.43)
Unemployed	45.4	(45)	1.12	(0.69-1.82)	60.2	(70)	1.03	(0.60-1.77)	50.1	(24)	1.21	(0.54-2.70)	59.6	(36)	**2.17**	(1.23-3.84)
Retired	39.2	(63)	1.20	(0.78-1.84)	42.5	(88)	0.79	(0.55-1.14)	62.1	(36)	1.69	(0.81-3.52)	60.8	(52)	1.71	(0.99-2.93)
Other	53.6	(18)	1.22	(0.48-3.13)	47.8	(136)	**0.51**	(0.37-0.70)	19.9	(3)	0.45	(0.78-2.62)	30.3	(35)	1.04	(0.63-1.74)
Occupational status																
High	40.3	(95)	1	(ref.)	54.2	(128)	1	(ref.)	25.1	(26)	1	(ref.)	32.1	(41)	1	(ref.)
Upper	37.1	(401)	0.86	(0.62-1.20)	53.4	(514)	0.90	(0.66-1.22)	36.8	(146)	1.61	(0.89-2.93)	33.5	(167)	0.99	(0.62-1.56)
Intermediate	42.4	(228)	0.99	(0.68-1.43)	56.2	(738)	1.03	(0.75-1.42)	34.8	(76)	1.41	(0.74-2.69)	34.2	(243)	1.06	(0.65-1.71)
Simple	44.0	(312)	1.04	(0.72-1.50)	55.5	(575)	0.96	(0.68-1.35)	46.0	(136)	**2.37**	(1.24-4.53)	39.2	(210)	1.18	(0.72-1.94)
Low	42.4	(107)	0.92	(0.56-1.49)	57.9	(224)	1.17	(0.78-1.78)	55.0	(56)	**3.34**	(1.51-7.39)	52.7	(107)	1.61	(0.88-2.94)
Occupational social class																
White-collar	41.0	(660)	1	(ref.)	54.8	(1603)	1	(ref.)	35.1	(231)	1	(ref.)	35.2	(536)	1	(ref.)
Blue-collar	41.2	(478)	0.88	(0.73-1.07)	57.1	(556)	0.99	(0.80-1.22)	47.2	(209)	**1.51**	(1.08-2.10)	44.0	(226)	1.23	(0.93-1.63)

a % = percent; n = number of cases
b OR = odds ratio; CI = confidence interval; calculation via logistic regression; conducted separately for each occupational indicator; adjusted for age, marital status, income, educational qualification, regional distribution, and interview mode; significant values ar printed in bold
c Weekly use refers to 30-day analgesics users

2.2 Exploring socio-economic inequalities in the use of medicines: Is the relation mediated by health status?

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Original research paper

Exploring socioeconomic inequalities in the use of medicines: Is the relation mediated by health status?

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Highlights

- Health status seems to play a mediating role between SES and medicine use
- Identification and elimination of the reasons for poor health among people of low SES may therefore help to reduce health inequalities directly
- A decline in the use of medicines would also result in less side effects and a reduced number of people with medicine-related misuse and addiction

Abstract

Objectives: This study evaluated mediating effects of the health status on the association between socioeconomic status (SES) and medicine use. It was hypothesized that more privileged people show a reduced use of medicines, as compared to the underprivileged, due to their superior health status. It was further hypothesized that people may apply medication according to their type of health complaint (ill physical versus mental status).

Study design: Data were taken from the 2012 German Epidemiological Survey of Substance Abuse (ESA), a nationally representative cross-sectional study of n=9084 individuals of the German general population aged 18-64 years.

Methods: Direct and indirect effects of SES on weekly use of analgesics and sedatives/hypnotics were examined by applying generalized structural equation modeling. Self-rated physical and mental health statuses were considered as potential mediators. SES was measured by using educational level as a proxy. All analyses were gender-stratified.

Results: Among males, both physical and mental health mediated the path from SES to the use of analgesics and sedatives/hypnotics, respectively, with a stronger effect of physical health on analgesic use and mental health on sedative/hypnotic use. These effects were only partially found among females.

Conclusions: Social inequalities in health seem to have substantial impact on the prevalence of medicine use. Identification and elimination of the reasons for poor health among people of low SES may therefore not only help to reduce health inequalities directly. A decline in the use of medicines would also result in less side effects and a reduced number of people with medicine-related misuse and addiction.

Keywords: Social inequalities in medicine use; pharmacoepidemiology; social-epidemiology; socioeconomic status; mental and physical self-rated health; Germany

Introduction

The prevalence of medicine use as well as sales of medicines have risen in the German general population and in other European countries; a development that may have serious consequences for public health.[1,2] Evidence also points towards an unequal distribution of the use of medicines across the population. Several European studies have revealed a strong negative association between socioeconomic status (SES) and the use of medicines, that is, the lower the SES, the higher the use of medicines.[1,3,4,5,6]

Studies exploring socioeconomic inequalities in the use of medicines are rare. However, results suggest that other factors and particularly a person's health status may explain the association between SES and medicine use. First, research showed that the correlation of SES and medicine use disappeared when analyses were adjusted for health.[7] Second, several studies indicate that health status strongly predicts the use of medicines.[1,8,9,10] People with an ill health status might be either more prone to use medicines prescribed by a physician, or may tend to use over-the-counter (OTC) products to medicate themselves. At the same time, it is well-known that SES and health are positively correlated, that is, the higher the SES, the better the health status.[11,12]

According to these references, health status might play a mediating role between SES and medicine use. However, studies examining this assumption are lacking so far. In case of full mediation by individual health status, measures to reduce inequalities in medicine use would have to focus on the health status itself, with an emphasis on preventing ill health among lower SES-groups. On the other hand, if inequalities in medicine use were not fully explained by differences in health, SES would determine a person's health status, but also directly impact on the use of medicines. In this case, a (complete) reduction of inequalities in medicine use would not be reached by reducing health inequalities, and further explorations of direct reasons for SES-inequalities in medicine use would be needed.

The aim of the present study was to evaluate the mediating role of the health status between SES and medicine use. In particular, it considered direct and indirect pathways from SES to the use of two different classes of medicines most prevalently used in the German population, namely analgesics and sedatives/hypnotics.[13] Self-rated physical and mental health statuses were considered as potential mediators between the paths from SES to analgesic or sedative/hypnotic use. It was hypothesized that lower rates of medicine use among people of higher SES, compared to higher rates of medicine use among people of lower SES, are exclusively attributable to their superior health status. Since patterns of medicine use should strongly depend on self-perceived complaints (physical and mental symptoms) and on the intended effect of the drug, it was also hypothesized that physical health should be of greater importance in the relationship between SES and analgesic use (as compared to sedative/hypnotic use), while mental health should be of greater importance in the relationship between SES and sedative/hypnotic use.

Methods

Study design and sample

Data were taken from the 2012 German Epidemiological Survey of Substance Abuse (ESA), a nationally representative cross-sectional study of n=9084 individuals drawn from the 18- to 64-year-old German-speaking population living in private households in Germany (response rate: 53.6 %). A two-stage sampling approach with oversampling younger and undersampling older birth cohorts was applied to achieve a representative sample of the German population (aged 18-64 years). Data collection was conducted from April to August 2012 using a mixed-mode design with paper-and-pencil questionnaires, computer-assisted telephone interviews (CATI), and online questionnaires.[14]

Measures

Major outcome variables of the analytical model were weekly analgesic use and weekly sedative/hypnotic use. Weekly analgesic use was assessed by asking “During the last 30 days, how often did you use analgesics (painkillers)?”, and by providing five response categories (“did not use it at all”, “less frequent than once a week”, “once a week”, “several times a week”, “daily”). A list of the most common pharmaceuticals was provided to facilitate the allocation of a drug. Individuals who used analgesics at least once a week in the last 30 days were treated as weekly analgesic users; all others, i.e. non-weekly users and non-users, were defined as the reference group. Weekly sedative/hypnotic use (including anxiolytics) was assessed accordingly. Weekly use was chosen as a measure of medicine use in this study since weaker indicators (e.g. monthly use) are unlikely to vary by SES.[6]

SES is acting as exposure variable and was assessed by using educational level as a proxy. The highest educational level achieved was categorized into three groups, based on the International Standard Classification of Education (ISCED): low (less than primary, primary, and secondary I), medium (secondary II, post-secondary/non-tertiary), and high (tertiary I and II, or higher) education.[15] Individuals currently attending a school of general education were excluded. In the statistical analysis, SES was dummy-coded with the highest status acting as reference category. To simplify the outputs of a complex statistical model, tables and figures show results for the comparison of the extreme SES-groups only (i.e. low versus high SES is shown, medium versus high SES was also estimated but is not shown).

Potential mediators between SES and medicine use were self-rated physical and mental health. It was assessed by asking “How would you rate your current health status?” and “How would you rate your current mental well-being?”, respectively. Five-point Likert scales were dichotomized into good (very good, good) and ill (fair, poor, very poor) health,[16] while the former group was defined as the reference category. Self-rated health has been evaluated as a strong and consistent predictor of mortality and functional health decline.[17]

To control for potential confounder effects, age (continuous, 18-64 years), marital status (married, unmarried), regional distribution (East Germany, West Germany, Berlin; dummy-coded), and interview mode (paper-and-pencil questionnaire, CATI, online questionnaire; dummy-coded) were included as covariates.

Statistical analyses

A mediation analysis was applied to explore possible mechanisms through which an exposure and an outcome might be associated.[18] Three paths are relevant for the investigation of mediating effects: the direct, the indirect, and the total effect. The model of this study suggests four direct effects (from low and medium SES to analgesic and sedative/hypnotic use, respectively), eight indirect effects (from low and medium SES to analgesic and sedative/hypnotic use through physical and mental health, respectively), and two total effects (sum of direct and indirect effects, one for analgesic use and one for sedative/hypnotic use) (Figure 1).

>>> Figure 1 could be placed here <<<

Full mediation is indicated if the indirect effect is statistically significant, while the direct effect is non-significant. In order to quantify the strength of a full mediation, the proportion of the total effect mediated by health is indicated in the output. If both the indirect and the direct effect are significant, there is evidence for partial mediation. The requirements for a mediation analysis are not fulfilled if an indirect and/or a total effect, or a single path of an indirect path, is non-significant.[18]

To evaluate mediating effects statistically, generalized structural equation modeling (GSEM) was applied.[19] Models were fitted by using the maximum likelihood method, assuming logit link functions and Bernoulli distribution for binary outcomes. For reasons of clarity in a complex GSEM, and to enable comparability of estimates between pathways and across the models, only binary variables were included in the model allowing a consistent reporting of odds ratios (OR) (with corresponding 95% confidence intervals).

Since numerous studies showed extensive gender differences in the use of medicines and medical service in general,[20,21] analyses were stratified by gender. Data were statistically weighted to account for the disproportionate sampling and differences in sociodemographic characteristics between the sample and the German adult population in 2012. Statistical analyses were carried out with Stata 14 (Stata Corp LP, College Station, TX).

Results

Sample description

Characteristics of the study sample are shown in Table 1. The mean (SD) age of the total sample was 42.3 (13.1) years; 50.8 % were male. SES-groups were distributed similarly across gender; approximately 25 % of male and female respondents were ascribed to the highest SES, approximately 15 % to the lowest. Ill physical health was reported by 29.0 % of males and 28.1 % of females. A slightly higher proportion reported an ill mental health status (males: 30.1 %; females: 33.3 %). Analgesics were used at least once a week in the past 30 days by 16.3 % of men and 20.7 % of women; weekly sedative/hypnotic use was reported by 3.3 % of men and 5.0 % of women.

>>> Table 1 could be placed here <<<

Mediating effects

Figure 2 shows single path correlations for males. The likelihood for exhibiting ill physical health was significantly higher among males of low SES) as compared to those of high SES (OR=2.23). A slightly lower likelihood was found for the path from low SES to mental health (OR=1.70). Ill physical health was associated with 3.04-fold increased odds for analgesic use, while the odds were increased by a factor of 1.70 regarding mental health. The effect of SES on analgesic use was non-significant, that is, no direct effect was indicated. Table 2 suggests that 39.8 % of the total effect on analgesic use could be explained by the indirect effect of low SES through physical health, while 12.6 % was due to the indirect effect of low SES through

mental health. Concerning sedatives/hypnotics, increased odds were found for males reporting ill physical (OR=2.35) and mental (OR=10.75) health (Figure 2). Full mediation on the effect of low SES on sedative/hypnotic use was indicated for both mediators; 18.6 % of the total effect was attributable to physical health and 34.1 % to mental health (Table 2).

>>> Figure 2 could be placed here <<<

>>> Figure 3 could be placed here <<<

Figure 3 shows single path correlations for females. Compared to high SES, females of low SES had 1.75-fold increased odds for an ill physical health status. In turn, females with ill physical health exhibited 3.74-fold increased odds for analgesic use. No direct effect of SES on analgesic use was indicated. Full mediation on the effect of low SES on analgesic use through physical health was indicated; 73.5 % of the total effect could be explained (Table 2). Ill mental health was associated with increased odds for both analgesic (OR=1.36) and sedative/hypnotic use (OR=4.85) (Figure 3). An indirect effect of low SES on the use of sedatives/hypnotics through physical health was indicated (OR=1.74) (Table 2). However, since SES and mental health were not correlated (Figure 3), mediating effects could not be assumed.

>>> Table 2 could be placed here <<<

Discussion

The present study evaluated mediating effects on the pathway from SES to weekly analgesic and sedative/hypnotic use by self-rated physical and mental health status, respectively. Among males, both physical and mental health mediated the path from SES to analgesic and sedative/hypnotic use, with a stronger effect of physical health on analgesic use and mental health on sedative/hypnotic use. Inconsistent results were found among females.

Among males, pathways from low SES to both analgesic and sedative/hypnotic use were fully mediated by both physical and mental health, respectively. This suggests that socioeconomic inequalities in medicine use are rather attributable to health inequalities than to

differences in SES. While strong associations between SES and health,[11,12] and in turn, between health and the use of medicines have repeatedly been shown,[1,8,9,10] evidence for mediating effects of health was lacking so far. Moreover, no direct effect was observed between SES and medicine use, and high proportions of the total effects can be explained by mediating effects of health in the statistical models. In total (low plus medium SES and physical plus mental health), mediating effects explained 76.6 % of analgesic use and 74.5 % of sedative/hypnotic use. Health inequalities therewith seem to be the major driving force for differences in medicine use by SES. No third variables which might lead to SES-differences in medicine use, such as willingness to use medicines at a given health status or impaired affordability of medicines,[22] seem to be involved to a substantial degree. Identification and elimination of the reasons for poor health among people of low SES may therefore help to reduce health inequalities. One well-known reason is an elevated likelihood of engaging in unhealthy behavior such as smoking, episodic heavy drinking and diminished physical activity.[11,12] Accordingly, efforts to improve health among individuals of low SES should already start at the prevention level and make sure that preventive measures reach all socioeconomic levels. Schools, workplaces or neighborhoods are examples of places with a socioeconomic segregation and therefore potential outlets to reach individuals of low SES.[23]

Similar conclusions can only partially be drawn for females. Physical health fully mediated the association between low SES and analgesic use, with no statistically significant direct effect from SES to analgesic use and a high proportion of medicine use being mediated (73.5 %). However, mediating effects by mental health on both analgesic and sedative/hypnotic use could not be observed. This result was unexpected and is not in accordance with the literature. For instance, based on a cross-sectional sample of the UK household population, a strong relationship between educational level and prevalence of neurotic disorders was found for men and women,[24] and similar findings were reported in other European studies.[25,26] Findings of the present study are corroborated by one study only, revealing a lacking association between

family affluence score and girls' self-rated mental health.[27] One explanation for this inconsistency could be found in different measurements of mental health. The latter and the present study used a self-rated assessment, while the other studies used clinical diagnoses. Assessments of health status (i.e. self-rated versus clinically diagnosed) were found to vary substantially depending on the type of measurement.[28,29] Physicians may focus on objective symptoms and diagnoses when assessing a patient's health status, while respondents may focus on subjective symptoms, functional limitations and quality of life.[29] Regarding somatoform health complaints, a physician may attribute them to mental concerns, while a patient would rather rate them as physical complaints. Considering that women tend to somatize more than men,[30] self-rating may contribute to an inflation of the number of women with ill physical health, which might in turn lead to greater SES-differences in women's physical compared to mental health status. Besides, an indirect SES-effect on sedative/hypnotic use through physical health was found among females, but no statistically significant total effect. Mediating effects could not be deduced here. This implies that sedative/hypnotic use is equally distributed across SES-groups, and that females of the study sample were using sedatives/hypnotics independently of their SES. Certainly, in order to properly evaluate these findings, and to draw sound conclusions, further investigations are needed.

It was further hypothesized that physical health is of greater importance in the relationship between SES and analgesic use (as compared to sedative/hypnotic use), while mental health should accordingly be of greater importance in the relationship between SES and sedative/hypnotic use. The present study corroborates this hypothesis for males. Nearly 40 % of the effect of low SES on analgesic use was mediated by physical health, but less than 13 % by mental health only. Regarding sedative/hypnotic use, an inverse pattern was found. It thus seems that males of the study sample used analgesics or sedatives/hypnotics according to their type of health complaints, regardless of the individual's SES. For females, no conclusions can be drawn due to a lacking mediating effect of mental health on medicine use.

Methodological considerations

Educational level was used as it is known as a reliable proxy for SES and has been revealed to be a good predictor of self-reported health.[31,32] Education is also supposed to be fairly stable beyond early adulthood[33] and has become the most commonly used SES measure in epidemiological studies.[31]

It has been refrained from adjusting the GSEM for other potential SES-indicators such as income or occupational prestige. The study's aim was not to explore pathways from *education* itself to medicine use, but from *socioeconomic status* to medicine use. In other words, education was used as one possible proxy for SES.[34] The use of a three-level measure of SES instead of two levels (low versus high) was chosen for the analyses to prevent loss of information and deceptions of group differences due to large group sizes. This approach follows the majority of social-epidemiological studies and methodological recommendations.[12,15]

Due to inconsistent and unexpected findings among females in this study, and a lack of comparable studies focusing on this issue, further investigations are needed in order to draw sound conclusions. Beyond the mediator analysis, future research might also address moderating effects of SES on health. That is, ill health might lead to different patterns of medicine use, depending on SES.[4] It has been shown that healthy males of lower SES were more likely to use OTC drugs as compared to those of high SES, while among those with ill health, high SES-individuals were more likely to use prescribed medicines.[35,36]

Strength

A major strength of this study is the evaluation of mediating effects by applying GSEM. The statistical power of GSEM is remarkably higher as compared to the standard regression method, missing data are not handled by listwise deletion, and a simultaneous consideration of all indicators and pathways is possible through GSEM.[18] Another plus is the high-quality data source, characterized by a large sample size and a standardized data collection.[14]

Limitations

It was not possible to distinguish between prescribed and non-prescribed/OTC medicine use due to lacking information in the data. Several international studies indicated that socioeconomic inequalities in medicine use substantially vary in this respect. In Austrian samples, individuals of higher SES were more likely to use non-prescribed medicines, while those of lower SES rather used prescribed medicines.[36,37] A Danish study showed a declining prevalence of prescribed medicine use by SES, while no association was found for OTC drugs.[38]

Conclusions about causal relationships are limited due to a cross-sectional study design. Poor health could also lead to a lower SES, which would change the order of SES and health. However, a stronger causal relation from SES to health, rather than vice versa, is supported by the literature.[11]

Conclusions

According to latest estimates for Germany, about 1.5 to 1.9 million people are addicted to medicines.[39] This study showed that social inequalities in health seem to have substantial impact on the prevalence of medicine use in the population. Identification and elimination of the reasons for poor health among people of low SES may therefore not only help to reduce health inequalities directly. A decline in the use of medicines would also result in less side effects and a reduced number of people with medicine-related misuse and addiction. Inconsistent findings among females, however, showed that further investigations are needed in order to draw sound conclusions and public health implications.

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Tables & Figures

Table 1: Characteristics of the study sample, 18 to 64 years old males and females (total n=9084)

	Males		Females	
	n	%	n	%
Sample size	3929	50.8	5155	49.2
Age (years)				
18-24	987	12.6	1154	12.4
25-34	639	19.2	954	18.4
35-44	559	19.4	874	20.8
45-54	855	27.7	1075	26.2
55-64	886	21.2	1098	22.3
Socioeconomic status (SES)				
low	464	13.2	575	14.1
medium	2267	61.0	3074	61.4
high	1042	25.8	1299	24.5
Marital status (unmarried)	47.4	2104	41.4	2455
Physical health (ill)	962	29.0	1296	28.1
Mental health (ill)	1044	30.1	1612	33.3
Weekly analgesic use	530	16.3	961	20.7
Weekly sedative/hypnotic use	105	3.3	216	5.0

n=number of cases; %=percent; n is unweighted; % is weighted

Table 2: Direct, indirect and total effects of socioeconomic status (SES) on analgesic and sedative/hypnotic use, 18 to 64 years old males and females (total n=9084)

	Analgesics			Sedatives/hypnotics		
	OR	95%-CI	Proportion of total effect mediated	OR	95%-CI	Proportion of total effect mediated
Males						
Direct effect	n.s.	-		n.s.	-	
Total effect	9.38	(3.70-23.79)		40.19	(5.81-277.81)	
Indirect effect (low SES)						
Physical health	2.44	(1.57-3.80)	**39.8 %**	1.98	(1.11-3.55)	**18.6 %**
Mental health	1.33	(1.06-1.65)	**12.6 %**	3.52	(1.50-8.28)	**34.1 %**
Females						
Direct effect	n.s.	-		n.s.	-	
Total effect	2.73	(1.35-5.55)		-	-	
Indirect effect (low SES)						
Physical health	2.09	(1.45-3.03)	**73.5 %**	1.74	(1.22-2.48)	-
Mental health	n.s.	-	-	n.s.	-	-

OR=odds ratio; 95%-CI= 95% confidence interval; n.s.= non-significant; SES= socioeconomic status (3 groups; reference group: high SES); controls: age, marital status, regional distribution, interview mode; measurement models for associated errors and covariates are estimated but not shown; indirect effects for medium SES are estimated but are not shown

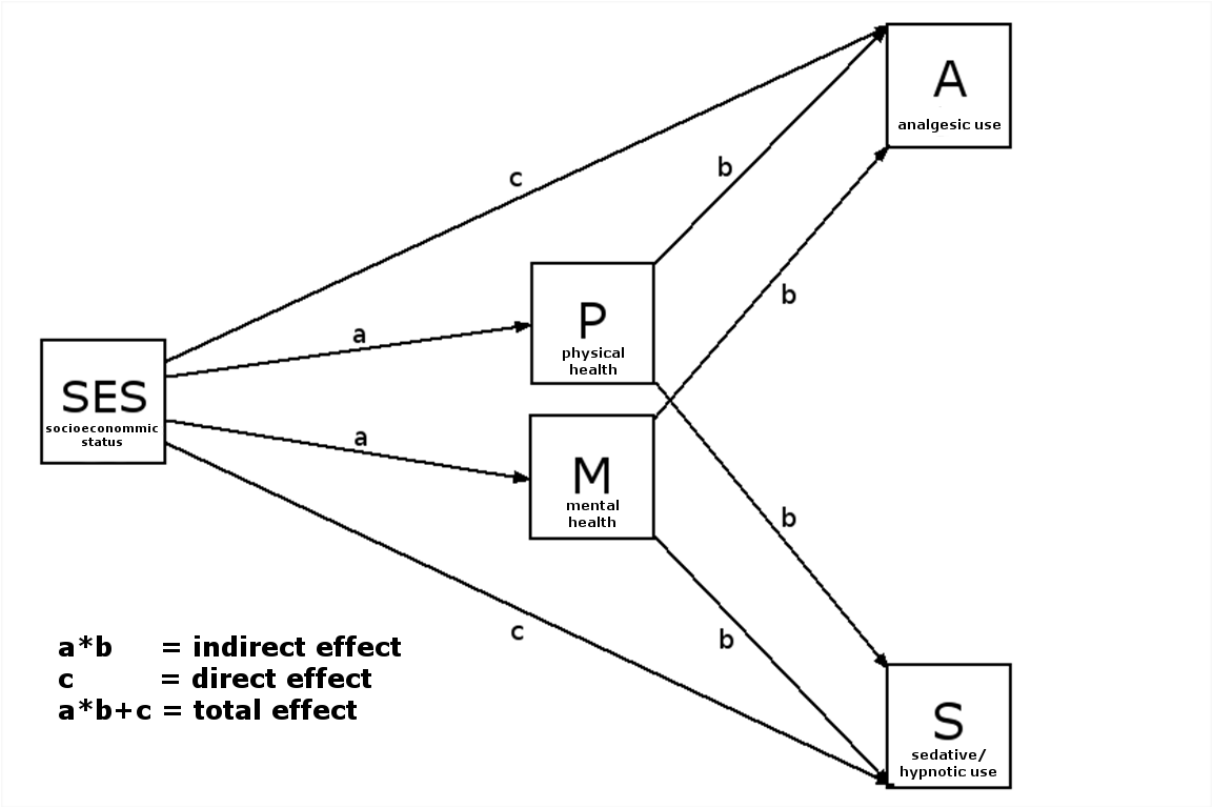

Figure 1: Pathway model for evaluation of mediating effects of self-rated physical and mental health status on the relation between socioeconomic status (SES) and weekly analgesic or sedative/hypnotics use

SES=socioeconomic status (3 groups; ref.: high SES); P=physical health (2 groups; ref.: good physical health status); M=mental health (2 groups; ref.: good mental health status); A=weekly analgesic use (2 groups; ref.: non-weekly analgesic use); S=weekly sedative/hypnotic use (2 groups; ref.: non-weekly sedative/hypnotic use); ref.=reference group

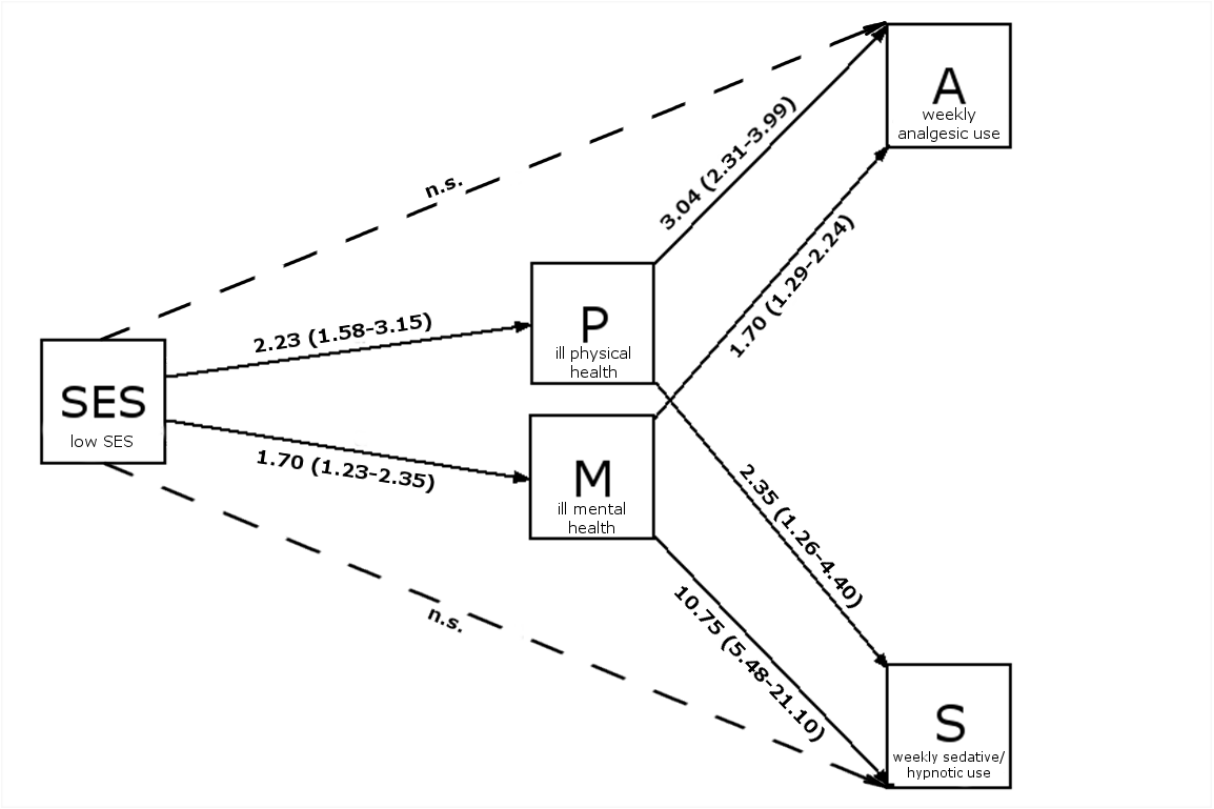

Figure 2: Single paths correlations, 18 to 64 years old <u>males</u> (n=3695)

Odds ratios (OR) and corresponding 95% confidence intervals (CI, in parentheses) are shown for significant paths only; effects for medium SES are estimated but not shown; measurement models for associated errors and covariates (age, marital status, regional distribution, interview mode) are estimated but not shown; SES=socioeconomic status (3 groups; ref.: high SES); P=physical health (2 groups; ref.: good physical health status); M=mental health (2 groups; ref.: good mental health status); A=weekly analgesic use (2 groups; ref.: non-weekly analgesic use); S=weekly sedative/hypnotic use (2 groups; ref.: non-weekly sedative/hypnotic use); ref.=reference group; n.s.=non-significant

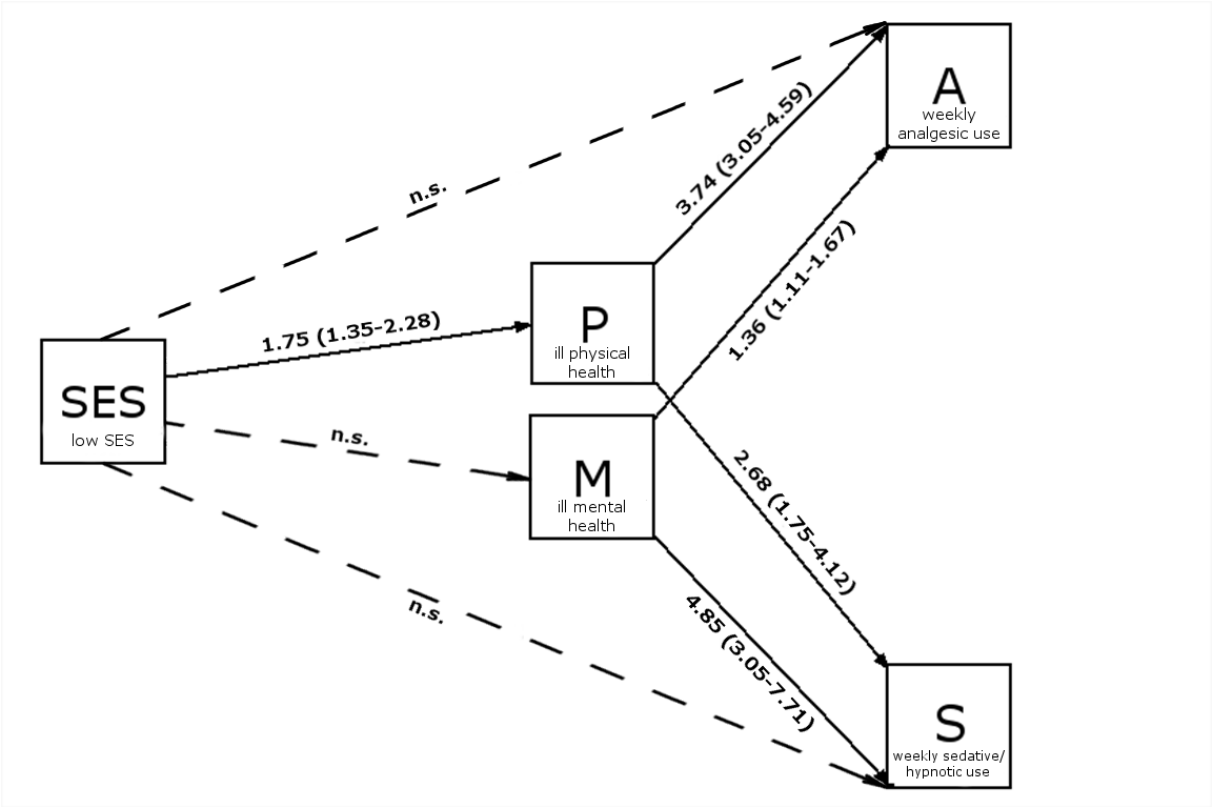

Figure 3: Single paths correlations, 18 to 64 years old <u>females</u> (n=4834)

Odds ratios (OR) and corresponding 95% confidence intervals (CI, in parentheses) are shown for significant paths only; effects for medium SES are estimated but not shown; measurement models for associated errors and covariates (age, marital status, regional distribution, interview mode) are estimated but not shown; SES=socioeconomic status (3 groups; ref.: high SES); P=physical health (2 groups; ref.: good physical health status); M=mental health (2 groups; ref.: good mental health status); A=weekly analgesic use (2 groups; ref.: non-weekly analgesic use); S=weekly sedative/hypnotic use (2 groups; ref.: non-weekly sedative/hypnotic use); ref.=reference group; n.s.=non-significant

3 Zusammenfassende Diskussion

3.1 Zentrale Ergebnisse

Die vorliegende Dissertation trägt zu einem besseren Verständnis der sozioökonomischen Ungleichheit beim Substanzmittelgebrauch bei, indem zwei wichtige Aspekte des komplexen und bislang noch nicht tiefgehend untersuchten Zusammenhangs beleuchtet wurden. Die erste Publikation beschäftigte sich mit der Beschaffenheit des sozialen Gradienten beim Substanzmittelgebrauch am Beispiel des Indikators Berufsprestige, beziehungsweise mit der Frage, inwieweit die Ausrichtung des Gradienten von der Konzeptualisierung und Operationalisierung des Zusammenhangs abhängt. Der Fokus der zweiten Publikation lag auf der Exploration der Kausalkette zwischen sozioökonomischem Status und Substanzmittelgebrauch mit dem Gesundheitszustand als mediierendes Glied. Ein großes, repräsentatives Sample der deutschen Bevölkerung wurde in beiden Studien verwendet, um die Forschungsfragen empirisch zu überprüfen.

Generell legen die Studienergebnisse der ersten Publikation nahe, dass es keinen einheitlich ausgerichteten sozialen Gradienten über die verschiedenen Substanzen und Indikatoren des sozioökonomischen Status gibt. Den empirischen Ergebnissen zufolge scheinen Aussagen über den sozialen Gradienten beim Substanzmittelgebrauch vielmehr davon abzuhängen, wie der Zusammenhang konzeptualisiert und gemessen wurde. Damit wurde zum einen deutlich, dass unterschiedliche Indikatoren für sozioökonomischen Status (wie Einkommen, Bildungsstand, Erwerbstätigkeitsstatus oder beruflicher Status) nicht gegeneinander austauschbar sind, auch wenn alle Einzel-Indikatoren einen Teil des Gesamtkonstrukts „sozioökonomischer Status“ messen. Es leitet sich daher die Empfehlung ab, die einzelnen Indikatoren in epidemiologischen Studien strikt voneinander getrennt zu betrachten. Zum anderen sprechen die Ergebnisse dafür, dass „Substanz nicht gleich Substanz“ ist, d.h. dass die Konsummuster bei jeder Substanz unterschiedlich ausgeprägt sind. Eine generalisierte Aussage wie zum eingangs erwähnten

sozialen Gradienten bei Morbidität und Mortalität lässt sich also nicht für den Substanzmittelgebrauch formulieren. Als einziges substanzübergreifendes Konsummuster hat sich gezeigt, dass Männer aus sozial benachteiligten Gruppen (z.B. Arbeitslose oder Personen mit niedrigem beruflichem Status) zwar eine niedrigere Monats-Prävalenz beim Alkoholkonsum aufweisen, aber generell eher zu problematischem Substanzmittelgebrauch neigen (z.B. Rauschtrinken, Cannabiskonsum, wöchentlicher Schmerzmittelkonsum). Präventions- und Interventionsmaßnahmen zur Reduzierung schädlichen Konsums sollten sich demzufolge auf derartige Hochrisikogruppen konzentrieren.

Die zweite Studie zielte auf die Exploration der kausalen Verkettung von sozioökonomischer Ungleichheit und Substanzmittelgebrauch am Beispiel vom Schmerz- und Beruhigungsmittelgebrauch ab. Die körperliche und die psychische Gesundheit wurden dabei als mögliche Mediatoren betrachtet. Die Studienergebnisse variierten wesentlich zwischen Männern und Frauen. Bei Männern wurde der Schmerz- bzw. Beruhigungsmittelgebrauch fast vollständig durch den (körperlichen und psychischen) Gesundheitszustand mediiert (ca. 75 %) und damit als Hauptfaktor für sozioökonomische Unterschiede beim Medikamentengebrauch identifiziert. Die Verbesserung der prekären Gesundheitssituation in niedrigeren sozialen Statusgruppen könnte damit bei Männern einen reduzierten Medikamentengebrauch zur Folge haben. Die Reduzierung des Medikamentengebrauchs wiederum würde zu weniger Nebenwirkungen führen und Folgeschäden durch Missbrauch und Abhängigkeit vorbeugen. Anknüpfend an die Ergebnisse der ersten Studie hat sich der problematische Substanzkonsum unter Personen mit niedrigem Sozialstatus auch in der zweiten Studie als vermeidbarer Risikofaktor für die Gesundheit aufgetan. Präventiven Maßnahmen an Orten mit hoher sozialer Segregation (z.B. Schulen, Unternehmen, Wohnviertel) kann dementsprechend hohe Relevanz beigemessen werden.

Bei Frauen wurden mediierende Effekte nur für die körperliche Gesundheit beim Schmerzmittelgebrauch beobachtet. Wie bei Männern konnten hier ca. 75 % des

Schmerzmittelgebrauchs durch den körperlichen Gesundheitszustand erklärt werden. Dem psychischen Gesundheitszustand hingegen konnte keinerlei mediierende Wirkung nachgewiesen werden. Dieses Ergebnis ist im Hinblick auf die existierende Literatur als unerwartet einzuschätzen. Eine mögliche Erklärung für die kontroversen Ergebnisse könnten unterschiedliche Messmethoden der psychischen Gesundheit sein (Geest et al., 2004; Giltay et al., 2012). In der vorliegenden Arbeit wurde der psychische Gesundheitszustand des Probanden anhand einer Selbsteinschätzung gemessen, während andere Studien häufig klinische Diagnosen verwendeten. Klinischen Diagnosen liegt in der Regel die objektive und fachliche Einschätzung des Arztes zugrunde, wohingegen Studienteilnehmer ihren eigenen psychischen Gesundheitszustand eher auf Basis subjektiver Beobachtungen und Empfinden bewerten. Für die methodische Erfassung in einer Studie bedeutet das, dass somatoforme Beschwerden bei der klinischen Diagnose eher (und korrekterweise) psychischen Symptomen zugeordnet werden, wohingegen derartige Beschwerden vom Probanden eher als körperliche Beschwerden eingeschätzt werden. Berücksichtigt man zudem, dass Frauen eher zur Somatisierung von Symptomen neigen (Wool & Barsky, 1994), so könnte die Methodik der Selbsteinschätzung fälschlicherweise zu einer erhöhten Anzahl bzw. einer Inflation der Frauen mit schlechter körperlicher Gesundheit beigetragen haben. Diese kontroversen und unerwarteten Ergebnisse für Frauen legen nahe, dass weitere Untersuchungen nötig sind, um fundierte Aussagen treffen zu können.

3.2 Stärken und Limitationen

Als übergreifende Stärke beider Studien ist die hochwertige Datengrundlage zu nennen, die sich durch ein großes Sample und standardisierte Erhebungsmethoden auszeichnet (Kraus et al., 2013). Eine weitere Stärke beider Studien ist der hohe methodische Anspruch. Nur mithilfe ausgefeilter methodischer Ansätze und der hochwertigen Datengrundlage ließen sich die sehr

spezifischen Forschungsfragen der vorliegenden Dissertation adäquat untersuchen. Auch die geschlechterstratifizierten Analysen können als studienübergreifende Stärke angesehen werden. Insgesamt tragen die Ergebnisse der beiden Studien wesentlich zum Verständnis des bislang schlecht untersuchten Zusammenhangs zwischen sozioökonomischem Status und Substanzmittelgebrauch bei.

Als besonderer Vorzug der ersten Studie ist der vergleichende Ansatz mit mehreren Indikatoren des sozioökonomischen Status anzuführen. Viele Studien behandeln die unterschiedlichen Indikatoren als gegeneinander austauschbare Variablen, welche jeweils „das Gleiche“ messen sollen – nämlich den sozioökonomischen Status einer Person. Wie sich in der vorliegenden Arbeit jedoch gezeigt hat, verhält sich jeder Indikator unterschiedlich in Zusammenhang mit dem Substanzmittelgebrauch. Die verschiedenen Indikatoren sollten daher in epidemiologischen Studien streng voneinander getrennt betrachtet und eingesetzt werden. Der spezielle Vorteil der zweiten Studie liegt in der Anwendung von Strukturgleichungsmodellen (SEM). Während mit herkömmlichen Regressionsanalysen eine Überprüfung von Kausalität nicht möglich ist, ließ sich mithilfe von SEMs die kausale Verkettung von sozioökonomischem Status, Gesundheitszustand und Medikamentengebrauch statistisch untersuchen. Zudem ist die statistische Power bei diesem Verfahren deutlich erhöht.

Dennoch müssen bei der Betrachtung der vorliegenden Dissertation auch einige Limitationen berücksichtigt werden. Aus der Stratifizierung seltener Outcomes (z.B. starker Tabakkonsum) nach Prädiktor-Variablen mit sechs Ausprägungen (berufliche soziale Klasse) resultierten bei der ersten Studie trotz großer Gesamt-Stichprobe relativ kleine Fallzahlen in den einzelnen Zellen, was eine reduzierte statistische Power zur Folge hatte. Außerdem ist generell von einer Unterschätzung der realen Prävalenzen auszugehen, da es sich bei den verwendeten Daten um sensible Selbstbeurteilungen der Probanden handelt. Als wesentlicher Schwachpunkt der zweiten Studie lassen sich fehlende Informationen zur Einnahme-Art der Medikamente nennen, also ob ein Medikament auf ärztliche Anordnung oder rezeptfrei

eingenommen wurde. Internationale Studien haben gezeigt, dass ebendiese Unterscheidung Auswirkungen auf die Ausrichtung des Zusammenhangs von sozioökonomischem Status und Medikamentengebrauch haben kann (Mayer et al., 2015; Vogler et al., 2015; Nielsen et al., 2003).

Weitere Stärken und Limitationen der jeweiligen Studien sind in den betreffenden Publikationen nachzulesen.

3.3 Fazit und Ausblick

Die vorliegende Dissertation hat insgesamt gezeigt, dass sich der Zusammenhang von sozioökonomischem Status und Substanzmittelgebrauch komplex gestaltet. Mit den beiden Publikationen wurde ein wichtiger Beitrag geleistet, mehr Empirie in ein bislang nur spärlich untersuchtes Forschungsfeld zu bringen.

In einer ersten Publikation hat sich gezeigt, dass der soziale Gradient beim Substanzmittelgebrauch nicht unidirektional verläuft, so wie es beispielsweise bei Morbidität und Mortalität vorzufinden ist (d.h. je niedriger der sozioökonomische Status, desto größer das Morbiditäts- und Mortalitätsrisiko). Vielmehr scheint die Ausrichtung des sozialen Gradienten beim Substanzmittelgebrauch davon abzuhängen, wie die Assoziation operationalisiert wurde. Obwohl alle Indikatoren des sozioökonomischen Status einen Teil eines Gesamt-Konstrukts messen und existierende Studien dazu neigen, Ergebnisse zu einem spezifischen Indikator für sozioökonomischen Status zu generalisieren (Room, 2004), sollten die Einzel-Indikatoren in zukünftigen epidemiologischen Studien zum Substanzmittelgebrauch streng getrennt voneinander betrachtet werden. Weiterer Forschungsbedarf besteht darin, die vergleichenden Analysen der vorliegenden Studie auch auf andere Indikatoren des sozioökonomischen Status wie Bildungsstand oder Einkommen sowie auf weitere Substanzen anzuwenden. Im Hinblick auf den epidemiologischen Anspruch der Studie lässt sich konstatieren, dass benachteiligte

soziale Gruppen (z.B. Arbeitslose, Personen mit niedriger beruflichen Position) einerseits zwar eine niedrigere Prävalenz beim Alkoholkonsum aufweisen, andererseits aber eher zu problematischen Konsummustern tendieren (z.B. Rauschtrinken, Cannabiskonsum, wöchentlicher Schmerzmittelgebrauch). Demzufolge sollten sich Präventionsmaßnahmen insbesondere auf derartige Hochrisikogruppen konzentrieren.

In einer zweiten Publikation wurde die kausale Verkettung von sozioökonomischem Status, Gesundheitszustand und Medikamentengebrauch beleuchtet. Die Studienergebnisse zeigten insbesondere für Männer, dass ein durchschnittlich schlechterer Gesundheitszustand unter sozial Benachteiligten als wesentliche Ursache für einen erhöhten Medikamentenkonsum angenommen werden kann. Die Exploration und Eliminierung der Ursachen für einen schlechteren Gesundheitszustand in niederen sozialen Statusgruppen könnte also direkten Einfluss auf den Medikamentengebrauch in der Bevölkerung haben. Ein verminderter Bedarf an Medikamenten würde sich schließlich reduzierend auf die Anzahl an Personen mit Nebenwirkungen, Missbrauch und Abhängigkeiten auswirken. Weniger eindeutig fielen die Ergebnisse für Frauen aus. Um fundierte Aussagen und Handlungsempfehlungen für die Gesundheitspolitik ableiten zu können, sind daher weitere Untersuchungen erforderlich.

Insgesamt sprechen die Ergebnisse beider Studien dafür, dass eine Verbesserung der prekären Lebensverhältnisse in sozial benachteiligten Statusgruppen eine Reduzierung des Substanzmittelgebrauchs zur Folge haben könnte. Insbesondere der problematische Konsum scheint unter Personen mit niedrigem Sozialstatus als wichtiger Risikofaktor für die Gesundheit zu gelten. Präventiven Maßnahmen an Orten mit sozialer Segregation (z.B. Schulen, Unternehmen, Wohnviertel) kann dementsprechend hohe Relevanz beigemessen werden.

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Eidesstattliche Versicherung

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Ich erkläre hiermit an Eides statt,

dass ich die vorliegende Dissertation mit dem Titel *"Sozioökonomische Ungleichheit beim Gebrauch psychoaktiver Substanzen"* selbstständig verfasst, mich außer der angegebenen keiner weiteren Hilfsmittel bedient und alle Erkenntnisse, die aus dem Schrifttum ganz oder annähernd übernommen sind, als solche kenntlich gemacht und nach ihrer Herkunft unter Bezeichnung der Fundstelle einzeln nachgewiesen habe. Ich erkläre des Weiteren, dass die hier vorgelegte Dissertation nicht in gleicher oder in ähnlicher Form bei einer anderen Stelle zur Erlangung eines akademischen Grades eingereicht wurde.

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