Chapter 9: Discussion and conclusions

The POLYMEH-study has been set up to map the prevalence of poly substance use and the characteristics of poly substance users in Belgium, based on available treatment demand data. The main research question was whether poly substance users have more (severe) mental health and other drug-related problems as compared with substance users who use just one substance. Overall, the various data sources indicate a high prevalence of poly substance use and misuse and a high comorbidity of psychiatric problems in this population. This significant association between poly substance use and mental health problems prompts an adapted approach at conceptual, methodological, organisational and policy level. After discussing the results in relation to the main research hypotheses, we formulate recommendations for a more integrated approach of drug problems at all levels.

9.1. Main findings

9.1.1. Poly substance users experience more problems than single substance users

The recent use of multiple substances including alcohol (≥5 units), psycho-active medication and illicit drugs on the same day was found to be largely present (67%)among persons attending outpatient specialized drug treatment (Chapter 4). Poly substance users had significantly higher composite scores (indicating more severe problems) than single drug users on all ASI-life domains (including psychological problems), except for legal problems.

A secondary analyses of the Sentinelle data (Chapter 5) also revealed a high prevalence of poly substance use (54.8%) among persons presenting for drug treatment. The Sentinelle-data, which are mainly limited to the TDI-data, did not show much differences between single and poly substance users regarding socio-demographic characteristics. Obvious differences were observed regarding patterns of substance use.

The latter finding was also shown in chapter 6, where the regression analysis of data from psychiatric hospitals (Chapter 6) demonstrated that the ASI composite score for drugs (measuring severity of drug problems and need for treatment) was the strongest predictor for belonging to the poly substance use group (p=.000). This is not surprising, since the group of poly substance users reported significantly higher percentages concerning the use of a wide variety of substances, except alcohol and antidepressants. Repeated cross-sectional analyses

of the Sentinelle data (Chapter 5) revealed that substance use patterns may vary when individuals re-enter treatment with a new treatment demand.

Twenty-eight percent of the sample of patients in psychiatric hospitals (Chapter 6) reported recent (last 30 days) poly substance use, while 42% of the respondents had ever used multiple substances during the same day. This study indicates that poly substance use is least common among primary alcoholics. Individuals with a current alcohol dependence had much lower percentages of poly substance use (6.3%), while individuals with a current drug dependence or a dual dependence (alcohol and drugs) reported much higher percentages of poly substance use in the last month (59.0% and 76.4%). At first sight, one could say that people suffering from alcohol dependence have a smaller chance of becoming poly substance users; however, it is unclear if the group with a dual dependence report alcohol or illegal drugs or medication as their primary substance.

Poly substance users are generally younger, and report different outcomes with regard to education level, employment status and legal situation than single drug users. As a result, it is not surprising that poly substance users show significantly higher severity scores on all domains of the ASI (education and employment; drug use; legal problems; family and social relationships and psychological/emotional health), except for medical problems and alcohol problems. When looking at QoL, a rather subjective outcome measure, poly substance users report significantly lower scores on overall QoL and health perception and on all domains (physical, psychological, social, environment) of the WHOQoL-Bref. In general, it can be concluded that poly substance users report worse outcomes on a wide variety of outcome measures compared with single drug users. These findings demonstrate that poly substance use was associated with problems on a number of life domains (unemployment, legal problems) broader than drug and psychological health-related aspects.

In Chapter 7, data collected in psychiatric hospitals were merged with data collected in specialized drug treatment facilities. These data show that 64% of the clients currently in treatment for substance abuse problems reported poly substance use in the last month. Poly substance users generally have more severe problems than single drug users. These difficulties are not limited to their drug use, but affect a large number of social dimensions in their life (e.g. family situations, legal status, employment) often interfering with their recovery process.

Also, analyses of three cohorts of TC residents (chapter 8) show a substantial number of poly substance users (45%). As compared with single drug users, individuals who used multiple drugs during the 30 days before they entered the TC had more severe problems on most life domains, except physical health and employment problems. More severe alcohol, drug and mental health problems confirm our hypothesis that poly substance users have – logically – more serious substance use problems (more frequent drug use and risk behavior) and also more severe psychological problems. In particular, recent suicidal behavior (suicidal ideation and attempted suicide) was significantly higher among poly substance users and they were more often prescribed medication for psychological problems.
Having stayed in a controlled environment during the last 30 days appeared to be an important mediating variable. Poly substance use was considerably lower among persons who resided the 30 days before entering the TC in a controlled environment, but this prevalence did not differ between the three cohorts. Among clients who did not stay in a controlled environment for 30 days, the prevalence of poly substance use was over 55%, and even 83% in the 2010 sample. Availability and access to various drugs appear to play an important role in the prevalence and frequency of poly substance use.

In various chapters (4,6,7) we performed logistic regression analyses in order to identify independent determinants of poly substance use. Variables introduced in the regression model were selected as they appeared to be significant in the univariate analyses. Regression analysis on the treatment demand data of De Sleutel (Chapter 4) revealed the protective value of control (i.e. living in a controlled environment, legal pressure) and the increased risk of poly substance use in persons living alone or with another substance abusing person. Moreover, poly substance use was significantly associated with dissatisfaction with leisure activities and with unemployment/lack of structured day activity. Mental health problems, as measured with the ASI, did not emerge from the regression analyses as a significant determinant of poly substance use.

9.1.2. Indications for an increase in poly substance use

The Sentinelle-data as well as the data from Flemish therapeutic communities show an increase in poly substance use between 1997 and 2010. A progressive increase of poly substance use was observed in the Sentinelle-database between 1997 and 2005, with a steep

increase between 2006 and 2008. This increase in poly substance use was accompanied by a larger number of persons using cocaine and alcohol.
In Chapter 8, a significant increase of poly substance use and the severity of drug and alcohol problems was observed among the 2010 cohort. As compared with the 1997 sample (40.4%), more persons entering the TC in 2010 (65.9%) had regularly used various types of drugs, while the prevalence of intravenous drug use and various physical health problems was much lower.

9.1.3. Mental health problems are more prevalent among poly substance users

The literature shows that mental health problems are highly prevalent among persons with substance use disorders (chapter 2). Few studies have differentiated between poly and single substance use disorders when studying psychopathology. Some authors have linked the level of psychopathology with the level of poly substance use and overall the psychiatric comorbidity is higher in poly substance users compared with single drug users. The prevalence of depression, anxiety disorders, post-traumatic stress disorder (PTSD) and eating disorders is generally higher among female substance users, while a higher prevalence of anti-social personality disorders was observed among men (Chapter 3).
The study among substance users entering alcohol or drug treatment in psychiatric hospitals (Chapter 6) showed that poly substance users experience a significantly higher number of psychological problems in the last 30 days and have significantly higher scores with regard to the prevalence of both axis I mood and anxiety disorders and axis II personality disorders. Overall, personality disorders were highly prevalent in the group of poly substance users, 67.1% of the clients met the criteria for at least one personality disorder as measured by the ADP-IV, while 63.2% of the clients met the criteria for at least one anxiety disorder as measured by the MINI.
A logistic regression model could not demonstrate a strong impact of psychopathology on poly substance use. Nor the prevalence of at least one personality disorder, nor the prevalence of at least one anxiety disorder, neither the ASI composite score for psychological health were significant predictors of poly substance use. The only predictor that partly demonstrated a direct impact of psychological wellbeing on poly substance use is the overall health perception (both physical and psychological) of the WHOQoL-Bref. While the diagnostic instruments (MINI and ADP-IV) showed no direct impact on poly substance use, lower satisfaction about their overall health resulted in a higher chance of belonging to the group of

poly substance users. Since the overall health perception starts from an individual's subjective experiences with their health, this is an important outcome, urging for a shift in focus to more patient-reported outcomes, such as QoL.

Chapter 7 has shown that poly substance users are at higher risk for committing suicide compared with single drug users, and that they report a higher number of days with psychological problems. The fact that 72% of the poly substance users were prescribed medication for psychological problems during the last month also illustrates worse psychological health in the group of poly substance users. The scores of the various diagnostic instruments (MINI, ADP IV) confirmed these findings, illustrating that poly substance users experienced significantly more often mood and anxiety disorders, as well as personality disorders, resulting in a high prevalence of co-occurring psychiatric problems.

Further analysis of these findings by use of logistic regression demonstrated a strong impact of psychological health, intensity of drug problems and employment status on poly substance use. However, it was the ASI composite score for psychological health, not the diagnostic instruments used to measure personality, and mood an anxiety disorders that showed an impact on poly substance use. Poly substance users reported a higher number of days with psychological problems in the last month, and a higher percentage of individuals with prescribed medication for psychological problems. This finding demonstrates that rather the psychological complaints as reported by the client, than the presence of psychiatric disorders (as defined by the DSM-IV) have an impact on belonging to the group of poly substance users. Therefore, we urge for more attention to patient reported measures and instruments, based on clients' own experiences, rather than focusing on the presence or absence of a diagnosed disorder.

9.2. Operationalisation and conceptualisation of 'poly substance use'

From the start of this research project, it appeared that practitioners, researchers and policy makers have a clear, but often different understanding of 'poly substance use'. The review of the literature confirmed this observation, as at least ten different definitions of poly substance use were retrieved. This ambiguity was also encountered in some of the databases selected for secondary analysis. Consequently, a pragmatic definition of 'poly substance use' was suggested, i.e. the use of more than one legal (alcohol $\geq$ 5 units) or illegal substance a day. This definition is based on the conceptualisation of multiple drug use in the (European version of the) Addiction Severity Index, an instrument used in several of the databases under study.

Still, issues associated with the *definition and conceptualization of poly substance use* were a recurring concern throughout the study. Generally, authors describe insufficiently what they mean with 'poly substance use' and how it was operationalised in their particular study. Since such conceptual differences have a large impact on the (interpretation of the) research findings, we strongly recommend to describe in detail the conceptualisation and operationalisation of 'poly substance use' in scientific papers and reports. At least following aspects need to be addressed :

- ***Use, misuse and dependence***. Do respondents 'use' multiple substances, are they 'misusing' more than one substance or are they dependent on several substances? If they just 'use' multiple substances, do they so regularly or not? In the latter cases, do they meet DSM-IV criteria for substance use disorders, or are other concepts used such as 'problem drug use' (EMCDDA) or 'addiction' (West, 2006). How frequent is 'regularly'?
- ***Simultaneous or concurrent.*** Simultaneous use (= at the same time) should be distinguished from concurrent use (= the use of multiple substances at separate occasions during a certain time frame). Simultaneous use of two (or more) substances is likely to cause interaction effects, while the use of various substances during one day may rather serve various functions (e.g., relaxation, waking up, increase concentration).
- ***Substances.*** When poly substance use is concerned, which specific substances are taken into consideration when categorising persons as 'single' and 'poly' substance users? Alcohol should be included as substance, but probably not any amount (rather harmful consumption, i.e. > 5 units). However, this will be evaluated differently in countries with an alcohol culture (e.g., the UK, Italy, Spain), as opposed to 'dry' countries (e.g., Sweden, Norway). What about prescribed drugs such as benzodiazepines and antidepressants? As these substances have interaction effects with alcohol, they need to be dealt with in the same way as alcohol? If prescribed drugs are excluded, what if these drugs are taken without prescription? Are various substances belonging to the same group of substances (e.g., crack and powder cocaine, heroin and codeine) regarded as one or several substances, and are users consequently categorised as single or poly substance users? Also, some substances are prescribed within the framework of substitution treatment (e.g., methadone, buprenorphine), while persons continue to use heroin. Should this be regarded as poly substance use? If so, what about heroin addicts who are prescribed diacetylmorphine and continue to use

street heroin? It is clear that authors should specify which substances were included and which were not.

- ***Time frame.*** The time frame is an important discriminating variable, since the overall majority of drug users will be regarded as poly substance abusers when a large time window is applied (e.g., lifetime or last year prevalence). A more narrow time frame may be better to identify poly substance users, although our study among TC-residents revealed that the focus on a short and atypical period may underestimate the extent of poly substance use.
- ***Instrument***. The instrument used to measure substance use is another important aspect, as it provides information for the comparison of findings from different studies. Some standardised instruments only look at the frequency of use (e.g. EuropASI,), while others also assess the amount and intensity of use e.g., MATE). Screening and diagnostic instruments may provide further information on the severity of the problem.
- ***Heterogeneity***. The study results indicate that there may be as many types of poly substance users as the number of substances that can be combined. Still, each categorisation has its limitations and will be characterized by heterogeneity. Even large categories such as 'alcohol' or 'illegal drug' users will be substantially heterogeneous, as the former may comprise beer, wine or liquor drinkers, while the latter may include persons who combine cocaine and heroin, cannabis and stimulants, or various club drugs (XTC, amphetamine, mephedrone). Detailed information on the drug use characteristics of the sample is therefore indispensable.

Despite the observation that most drug users who present for treatment use and misuse various licit and illicit substances, the common European registration tool (=Treatment Demand Indicator (TDI)) does not fully recognize this reality. The TDI collects information on clients at, or close to, their point of entry into treatment facilities for problems with one or more drugs, based on a dataset of 20 items including social characteristics, treatment contact details and drug profile (EMCDDA, 2000). This data collection system classifies clients by the primary and secondary drugs used: the primary drug is the drug reported as the drug that causes the client the most problems and that is usually the main reason for entering treatment

(EMCDDA, 2009). Secondary drugs are the drugs taken in addition (at the same time or consecutively) to the primary drug; up to four different drugs can be recorded for every client. Yet, this approach excludes poly substance use as primary problem, since one substance should be selected as primary drug. In reality, clients often enter treatment for problems with more than one substance, and often relapse into substance use through another substance than the main problem drug at treatment entry. In addition, the TDI denies the substantial proportion of alcohol misuse and dependence in persons addressing drug treatment services, as alcohol can only be registered as secondary drug. Given the mission and objectives of the EMCDDA, alcohol (mis)use is only discussed when it occurs in combination with the (mis)use of illicit substances. However, this predominant focus on illicit drugs and the division of alcohol and drug prevention, treatment and policy needs to be a topic of constant debate at European level.

Since many drug users have an alcohol problem in addition to an illicit drug problem (Colpaert, Vanderplasschen, Van Hal & Broekaert, 2008), it is important to document the problem of poly substance use and to recognize that persons may have more than one primary problem substance. Finally, methodological concerns are related to the registration of the primary substance, since this categorization is based on problems as defined by clients themselves as well as on short assessments or diagnoses (EMCDDA, 2009). These variations may hamper the accuracy of the registration and lead to the underestimation of some substance problems (e.g., misuse of (un)prescribed medication), if not assessed systematically.

It can be concluded that the concept ‘primary substance of abuse’ may be a helpful approach to categorize substance users for epidemiological purposes, but it obscures the overall picture of substance use behaviour in clinical samples with substantial poly substance use. Difficulties to assign persons to one type of primary drug or self-report of only the primary

substance may divert the focus from the use of other substances. Therefore, systematic screening of use and misuse of various substances (including alcohol and medication) at treatment entry is recommended.

Towards a definition of poly substance use

Although the concepts primary and secondary drug in the TDI can be criticized for the above-mentioned reasons, the categorisation of substances into nine groups (cf. Table 1) is helpful and allows a functional approach of substance use as similar substances cause the same effects and can therefore be regarded as one substance (e.g., stimulants, opiates). Since the reason for poly substance use, in particular simultaneous use, is often to enhance, reduce or alternate the effects of a particular substance, this intention needs to be reflected in the conceptualisation of poly substance use. For the same reason and for indicating that two substances are taken within a relatively short period of time, the time window is best set at one day (24 hours).

Consequently, we suggest the following definition of poly substance use:

"The use of two or more types of substances during a 24 hour period". As alcohol use is a socially accepted habit that is omnipresent in drug users, we only consider harmful alcohol use (≥5 units, leading to intoxication) as a substance in this definition of poly substance use. The use of medication is regarded as a substance in this definition, regardless whether it was prescribed by a doctor or not, since these substances have clear psychoactive effects which may interact with other substance use (e.g., alcohol).

Table 1: Categories of substances in the TDI (EMCDDA, 2000)

Category	Substances included
Alcohol	Beer, wine, spirits, ...
Opiates	Heroin, methadone, codeine, morphine, buprenorphine, ...
Cannabis	Marihuana, hash,
Cocaine	Cocaine, crack, ...
Stimulants	Amphetamines, methamphetamine, MDMA, other stimulants and derivates
Hypnotics, anxiolytics and sedatives	Barbiturates, benzodiazepines, ...
Hallucinogens	LSD, magic mushrooms, ...
Inhalants	
Other psychoactive substances	

In the DSM-IV, the diagnosis 'poly substance dependence' is only to be assigned if the pattern of multiple drug use is such that it fails to meet the criteria for dependence on any class of substance separately. In reality, this diagnosis is often inappropriately used as a residual category to refer to heavy drug users who are dependent on more than one substance (APA, 2011a). In the latter case, not the diagnosis 'poly substance dependence' but multiple co-morbid diagnoses of substance dependence should be given. In the DSMIV-TR, the definition of poly substance dependence was revised to provide clear examples of situations in which this diagnosis might apply (APA, 2011a). Still, it became clear that more than one interpretation of how to use this poly substance dependence diagnosis exist, as it may include indiscriminant use of a variety of substances, as well as persons who meet only one or two dependence criteria for a single substance but who meet three or more criteria when the various classes of drugs are taken together as a whole. The utility of the diagnosis 'poly substance dependence' has been called into question internationally because of its low prevalence rate (Schuckit et al., 2001) and in the light of the development of the DSM-5, it is advisable to once again rethink and reformulate the diagnosis 'poly substance dependence'.

A secondary analysis of the Minimal Psychiatric Data (Minimale Psychiatrische Gegevens, MPG) of patients treated in psychiatric hospitals in Belgium revealed that around 8% of all substance use disorders concerned 'poly substance dependence' (Gorissen, pers comm., 26-10-2010). Moreover, this diagnosis was the most frequently assigned diagnosis after 'alcohol dependence' in this population (60,7%) and concerned 9,6% of all diagnoses of dependence.

These rather high prevalence rates in patients in psychiatric hospitals in Belgium may be based on inappropriate use of this diagnostic category, in case of abuse or dependence of various substances. As discussed above, for situations in which patients use more than one substance and the criteria are met for more than one specific substance-related disorder, each disorder should be diagnosed separately.

The new DSM 5 will, by all odds, leave behind the dichotomisation 'abuse-dependence' in favour of a more dimensional approach which considers the severity of dependence for every class of substance (i.e., moderate or severe). Instead of the various diagnoses for substance abuse and dependence, more general diagnoses such as substance use disorder, cocaine use disorder, opioid use disorder, … are suggested. Still, it remains unclear how the new diagnosis 'poly substance use disorder' will be described in the new version of the DSM. It looks like the diagnosis will keep its residual character, the only difference being the extension from 7 to 11 symptom categories as is the case with the assessment of each substance. We recommend thorough and systematic assessment and diagnosis of dependence of each class of substances, potentially leading to the diagnosis of three or more substances of dependence. The diagnosis 'polysubstance dependence' should only be applied to problems associated with the use of one substance that are not pervasive enough to justify a diagnosis of dependence, but in which case the use of other substances impairs significantly other aspects of functioning (APA, 2011a). Such an approach to substance dependence is more discriminative and clinically relevant, as compared with a general diagnosis of 'polysubstance dependence' that refers to persons who are dependent on more than two substances.

9.3. Assessment of substance use and other psychiatric disorders in clinical practice

Based on the secondary analysis of various treatment samples, poly substance use is indeed rather the rule than the exception. While among samples recruited in alcohol treatment facilities the prevalence of illicit drug use is often limited to cannabis, poly substance use is omniprevalent in drug treatment services. Still, the number of persons using sedative and hypnotic drugs in alcohol treatment is large, and a great number of them can be classified as 'dependent' on these substances according to the MINI. Therefore, systematic and careful screening of use and misuse of various substances is necessary at intake, as persons entering treatment may hold back or minimize the use of some substances or just mention the main substance(s) they use. In case of poly substance use, the simultaneous or co-occurring use of substances needs to be taken into account with attention for the interconnections between various drugs. Also, the use of various substances within the same day should be explored,

e.g. by making a function analysis of the reasons why individuals use (different) drugs at various moments (Vanderplasschen et al., 2011). Such information may help to increase insight in one's drug use patterns and to anticipate future use. In treatment settings, assessment of the severity of the various substance use disorders will further be important, irrespective of the classification system used (DSM, ICD, …), since we found indications that the frequency and intensity of substance use are associated with more severe drug-related problems, including mental health problems. Consequently, abuse of cocaine and alcohol and potential use of other substances need to be assessed in case of opiate dependence. As abuse and dependence will be merged into one single category in the DSM 5, it will be important in future times to distinguish between a 'moderate' and a 'severe' substance use disorder for each class of substances (DSM, 2011). Overall, the use of a comprehensive assessment instrument is recommended that does not only focus on the history and frequency of substance use, but also takes into account intensity and dosage. For example, the MATE (Measuring Addiction Triage and Evaluation) assesses history, frequency and dosage and severity of dependence and yields some additional information as compared with the ASI. Also, the 'Interview for Research on Addictive Behavior' *(*IRAB) *(*López-Torrecillas, Godoy, Pérez-García, Godoy, & Sánchez-Barrera, 2001) is a specific tool for the assessment of the frequency, intensity and quantity of substance use, which has been applied in various studies (Verdejo-Garcia et al., 2008).

Several data sources (chapter 6 & 7) indicate that poly substance users have more severe psychological complaints as compared with single drug users. Screening and, if necessary, further assessment of mental health is therefore a prerequisite at treatment entry, in particular among poly substance users. Given the negative impact of (untreated) psychiatric disorders on treatment retention and outcomes, early assessment and identification of such problems should be a standard procedure in substance abuse treatment. Several validated screening instruments are available, diverse in length and duration, but should at least screen for anxiety, depressive and stress disorders (e.g., DASS).

Also, personality disorders are very common among substance users entering treatment. Assessment of personality disorders in this study was based on clients' self-report (with the ADP-IV questionnaire). Knowing that the presence of one or more personality disorders can have an unfavourable influence on the course, prognosis and treatment outcome of substance use disorders (Kokkevi, Stefanis, Anastasopoulou & Kostogianni, 1998; Rounsaville, Dolinsky, Babor & Meyer, 1987), we recommend the inclusion of a thorough personality

(disorder) assessment in the intake and assessment phase of substance abuse treatment. Preferably, a dimensional instead of a categorical approach of personality disorder assessment should be chosen, in which personality traits are described on dimensions of normal and pathological personality. The changes that are currently being proposed for the reformulation of the Personality Disorder section of the DSM-5 are going in that direction (Hopwood, Thomas, Markon, Wright, & Krueger, in press). A more dimensional diagnostic system has numerous advantages, including an improved clinical utility (Verheul, 2005). Although a thorough personality disorder assessment can be time-consuming and valid assessment tools are usually lengthy, working with personality trait profiles will provide the clinician with valuable tools for establishing a therapeutic relation and developing an individual treatment programme. This way, instead of a categorical approach (personality disorder : yes or no), more comprehensive diagnostic information will be available. The Personality Inventory for DSM-5 (PID-5) is a new questionnaire developed for measuring DSM-5 traits and therefore incorporating the dimensional shift and clinical advantages of the DSM-5 (Hopwood et al., in press). Ideally, assessment is based on a multi-method approach, including information from other informants than just the patient, in order to improve reliability (Meyer et al., 2001; Perry, 1992).

Given the high rate of mental health problems in (poly) substance users, it may not surprise that the prescription of benzodiazepines and/or antidepressants is very common preceding or during treatment, in particular in methadone maintenance programs and psychiatric services. However, the role of non-prescribed use and misuse of these substances in poly substance use may not be underestimated and the appropriateness of the prescription of benzodiazepines and antidepressants for individuals with both substance use and other psychiatric disorders needs to be questioned (Brunette, Noordsy, Xie & Drake, 2003). Dependence of sedative and hypnotic substances needs to be assessed at treatment entry and the prescription policy need to be adapted accordingly. Besides medical and pharmacological treatment, psychotherapy and psychosocial support should be offered to deal with mental health problems like depression and anxiety in substance abuse treatment. According to Drake and colleagues (2007), integrated treatment of substance use and mental health problems is necessary, given the negative impact of a dual diagnosis on individuals' overall wellbeing. Co-occurrence of both disorders may result in problems in other life domains (e.g. unemployment, social isolation, problems with the courts), which need to be addressed in an integrated way.

9.4. Towards the integration of substance abuse and psychiatric treatment

The substantial prevalence of mental health problems among substance users addressing treatment, in particular among poly substance users, the multidimensional and interrelated problems these persons experience and the scientific evidence for an integrated approach of substance use and mental health problems, stress the importance of cooperating with and referral to other services (e.g. social services), in order to address these clients' needs. Still, a large gap can be observed between substance abuse and psychiatric services in Belgium. Despite the development of integrated treatment systems for drug users (Vanderplasschen & Lievens, 2009), the old gap between specialized drug treatment facilities (e.g., crisis intervention units, therapeutic communities) with a particular financing system and general health care services (including psychiatric hospitals) remains up to now. Most psychiatric services have traditionally been reluctant to treat drug abusers, although many psychiatric hospitals have a detoxification and/or treatment unit for alcohol abusers. On the other hand, specialized drug treatment services are only accessible for alcohol abusers if they have also problems with illicit drugs. This separate treatment system for alcohol and drug abusers is odd from an international perspective and may in particular hamper the treatment of poly substance abusers, as alcohol treatment services focus by default on alcohol and drug treatment services mainly target problems with illicit drugs. This study in particular has demonstrated the uselessness of such a strict distinction between alcohol and drug treatment, since most substance users are poly substance users. Therefore, it is recommended to join insights, methods and expertise from both sectors in order to improve the quality of substance abuse treatment.

Similarly, the division between substance use and psychiatric treatment need to be bridged. Abundant evidence is available about persons with a dual diagnosis falling through the cracks of the substance abuse and the psychiatric treatment system, because they are 'too psychiatric' or 'too addicted' to be treated in one of both systems. It is illustrative that, despite the high comorbidity of substance use and other psychiatric disorders, only a handful of integrated treatment services are available in Belgium. Rather than more specialized dual diagnosis services, the integration of substance use and psychiatric services is required to increase the effectiveness of the treatment of substance use disorders. Scientific evidence and available examples of good practice need to guide the development of services that combine insights, methods and approaches from both systems, without losing the peculiarities and strengths of each system. Case management is often applied in an integrated treatment approach to link

between substance abuse and psychiatric services and to provide continuous monitoring of clients' problems (Vanderplasschen, Rapp, Wolf & Broekaert, 2004). Also, close collaboration with primary health care professionals and outpatient psychiatric services is needed to improve the quality and continuity of treatment for substance abusers with mental health problems. The coming reform of mental health care, often referred to with the number of the specific article of the Belgian hospital law (article 107), is intended to reduce the number of hospital beds in favour of low threshold, outreaching and rehabilitation initiatives.

9.5. Poly substance use: a clinically relevant construct?

The insight that poly substance use is the rule rather than the exception is important, but even if practitioners, policy makers and researchers would agree about the definition or conceptualization, it cannot be considered as a unequivocal construct. Indeed, tens of combinations of substances are possible leading to the question whether poly substance use is mainly a theoretical construct with few practical relevance. Despite the diverse interpretation of the construct, it has practical relevance and it may be one of the basic insights in addiction as a disorder that very few substance users stick to one single substance. Second, also other well-defined substance use disorders are characterized by substantial heterogeneity, since opioid dependence may as well refer to 23 year old injecting heroin users, as to the 42 year old methadone patient with occasional heroin use as to the 63 year old codeine addicted lady. Such categorization is based on binding instead of distinctive features and some of the core characteristics have been described above. Third, concepts like 'primary substance' or a substance-specific approach are not likely to help us in practice, since we should focus on the use of multiple substances, their function and impact on substance abusers' daily living situation (Schensul, Convey & Burkholder, 2005). Consequently, instead of focusing on substance specific guidelines for the treatment of substance use disorders, more attention is needed for generic guidelines as substance users are most likely to use more than one substance. Also, when talking about recovery we should not do so focusing on the primary substance that led to the treatment demand, but taking into account the construct of 'poly substance use'. Given the role of alcohol in poly substance use (e.g. as a trigger for drug use and relapse), treatment and (relapse) prevention programs need to be sensitive for the likelihood of alcohol consumption after treatment (in combination with other substances, e.g. heroin) and inform about the risks of poly substance use. Also, harm reduction initiatives in community and prison settings should give attention to the risks of poly substance use.

Further, treatment programs focussing on persons dependent on a specific substance (e.g. methadone substitution treatment, Community Reinforcement Approach + vouchers for cocaine users) may be very effective and evidence-based programs, but should not ignore the use of other substances by even successful program participants. Therefore, generic practice guidelines like the APA-guideline for the treatment of persons with substance use disorders should be used in addition to substance specific guidelines, as they offer useful general treatment principles (e.g. treatment planning) which can be applied to persons who use other substances besides the substance addressed in the specific guideline.

9.6. Quality of life as the main outcome indicator?

Drug dependence is increasingly recognized as a chronic, relapsing disorder and the recovery process may be characterized by the replacement of one substance (e.g. methadone, heroin) by another (e.g. alcohol). Consequently, a treatment offer which is solely focused on abstinence or control of the use of one specific substance (e.g. cocaine) ignores the complexity of dependence problems. Starting from clients' needs and expectations may not only improve the accessibility of and retention in treatment, but also enhance treatment outcomes. Abstinence from the substance(s) they use is not always the primary reason or motivation why individuals seek help or enter treatment. Not seldom, problems in other life domains (e.g. family relations, legal problems) are deemed more important. Therefore, treatment of substance use problems should not solely focus on alcohol, drugs and mental health problems, but on individuals' overall wellbeing, including housing, occupation, social inclusion, … As poly substance users often have more drug-related problems and lower quality of life scores on various life domains (physical, psychological, social, environmental) (cf. Chapter 4 & 6), assessment of these problems and adequate support is needed in order to promote their inclusion in society (De Maeyer, Vanderplasschen & Broekaert, 2009). In particular, support concerning their occupational status, legal situation and living situation (Chapter 4 & 6) is recommended. Improvements in these life domains may indirectly influence substance use behaviour and result in a reduction of drug-related symptoms (Koo, Chitwood & Sanchez, 2007). From a long-term perspective, improving individuals' overall wellbeing may have a positive impact on the prevention of relapse and the adoption of a drug-free life style.

Despite the emerging interest in person-centred outcomes, such as quality of life, clinical practice and substance abuse research have been characterized by an almost unique focus on

substance-specific outcomes, i.e. abstinence, with no or limited attention for other aspects in life which have a larger impact on individuals' feelings of overall wellbeing (Fischer, Rehm, Kim & Kirst, 2005). According to these authors, person-centred concepts (e.g. QoL) based on individuals' own experiences and expectations, should become part of treatment assessment, planning, monitoring and evaluation. Treatment effectiveness is most likely to be improved when outcomes are based on clients' needs and their definition of success rather than on objectives and outcomes determined by practitioners or society in general.

9.7. Limitations of the study

One of the main limitations of this study was the (forced) use of different definitions of poly substance use. Since the various databases we have analysed were based on different instruments or registration tools, we could not apply the same definition of poly substance use in each separate study. The definition of poly substance use in the Addiction Severity Index (ASI) (i.e. the use of two or more substances during the same day) was used as working definition throughout the study, given the use of this instrument in three of the secondary analyses. Still, we experienced that this definition has its limitations, since persons who use methadone and heroin were also classified as poly substance users. Therefore, we have suggested an adapted, more functional definition of poly substance use, based on classes/categories of similar substances (cf. 9.2).

A second limitation we faced was the lack of a comprehensive database including data on alcohol and drug users from various treatment settings. Several authors (De Donder, 2006; Vanderplasschen et al., 2002) have criticized this shortcoming, resulting in unrepresentative and incomparable data for Belgium in many international comparisons (e.g. EMCDDA drug reports). The aforementioned gap between alcohol and drug treatment and between specialized (drug) treatment facilities and psychiatric services is the main reason for the lack of comprehensive data. DARTS (Drug Aid Registration System) is the most comprehensive registration system for specialized drug services in Flanders (but does not include alcohol services), while the Minimal Psychiatric Data (MPG) is the national registration system for persons admitted in psychiatric hospitals. Both registration systems are incompatible, and other interesting databases (e.g., Permanente Steekproef) only include fragmented data (e.g., on service utilisation in health care services). Moreover, the defederalisation of some authorities (e.g., drug prevention, social welfare, mental health care) is at the basis of the division of most databases. An additional problem is the lack of unique client identifier, in

order to exclude double countings in available databases and across registration systems. Some efforts have been done to overcome these problems, but up to now no comprehensive national database is available including data on the demographic, health and substance use characteristics and service utilisation of alcohol and drug users entering treatment in Belgium. Since one of the main goals of the EMCDDA is to collect such data in each European country, it may surprise that these data are not yet available for Belgium. The Scientific Institute of Public Health has recently increased its efforts to implement the TDI-protocol in all specialized and general health care services, which should lead to more representative and comprehensive treatment demand data for Belgium. However, it is not only necessary to expand the range of services included in the TDI-registration, but also to improve the quality of the collected data since a great deal of missing data are observed for some TDI-variables (e.g., primary substance) in the recent national drug report (Deprez & Vanbussel, 2011).

The POLYMEH-study has resulted in abundant information on the prevalence and extent of poly substance use and mental health problems among alcohol and drug users entering treatment. Still, it was not possible to identify clear patterns of poly substance use, as a cluster analysis did not reveal typical combinations of substances in the treatment demand data of De Sleutel (cf. Chapter 4). In-depth qualitative interviews may be more appropriate to explore the nature of poly substance use in various treatment settings, as we expect substantial differences in combinations of substances in e.g. methadone maintenance treatment and detoxification centres. Also, interviews with individuals out of treatment who use multiple substances may provide interesting information on how to address this risk behaviour in prevention and harm reduction initiatives, but also in treatment settings.

Another limitation of the presented prevalence data concerns the lack of 'control group'. Poly substance use may be an important issue among persons entering treatment, but this is only a (small) proportion of the total group of alcohol and drug users in the community. In the absence of large-scale epidemiological research on substance use and mental health in a representative population sample, the prevalence of substance use disorders is unknown in Belgium. Similar studies in the Netherlands (NEMESIS, Netherlands Mental health Survey and Incidence Study) and the United States (Epidemiological Catchment Area (ECA), and later National Comorbidity Survey (NCS)) have demonstrated the prevalence of various psychiatric disorders, including substance use disorders. Only some data are available in Belgium on the lifetime and last year prevalence of alcohol use disorders, based on the European Study on Epidemiology of Mental Disorders (ESEMeD) (Bruffaerts et al., 2005). In the light of the forthcoming DSM 5, it is recommended to collect up-to-date data on various

psychiatric disorders, including substance use disorders, and to repeat this measurement regularly in order to create a longitudinal perspective on the prevalence of psychiatric disorders in society.

Finally, the comparison and discussion of the prevalence of substance use and mental health problems in this report is based on various (standardized) instruments. This observation debilitates the comparison of percentages from the various chapters, although each of the separate chapters confirmed the main research hypotheses. The EuropASI was used in 4 of the 5 quantitative studies, but still it concerned various populations (in- and outpatient, alcohol and drug users). Assessment of mental health problems was only in chapters 6 and 7 based on specific diagnostic instruments (MINI and ADP IV), while in the other chapters the section on 'psychological problems' in the ASI was used for this purpose. Therefore, some caution is warranted when interpreting the results on mental health problems in the chapters 4 and 8. There appears to be a wide variety in instruments used for the assessment of substance use and other mental health problems. From a comparative and longitudinal perspective it is best to use the same assessment instruments in various studies and treatment settings, but often specific instruments are chosen for their particular characteristics and length, duration and user-friendliness are important concerns.

References

American Psychiatric Association (APA). (2011a). *Clarification of Concept of Polysubstance Dependence.* Available on: **http://www.psych.org/MainMenu/Research/DSMIV/DSMIVTR/DSMIVvsDSMIVTR/SummaryofPracticeRelevantChangestotheDSMIVTR/PolysubstanceDependence.aspx**

American Psychiatric Association (APA). (2011b). *DSM-5 development. Rationale for Changes to Substance-Related Disorders Tentative new title of new combined section: Addiction and Related Disorders.* Available on: http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=431#

Brunette, M.F., Noordsy, D.L., Xie, H.Y. & Drake, R.E. (2003). Benzodiazepine use and abuse among patients with severe mental illness and co-occuring substance use disorders. *Psychiatric Services, 54*(10), 1395-1401.

Colpaert, K., Vanderplasschen, W., Van Hal, G., Broekaert, E., & Schuyten, G. (2008). Dual substance abusers demanding treatment: demographic, substance-related and treatment utilization characteristics. *Journal of Drug Issues, 38*(2), 559-583.

De Maeyer, J., Vanderplasschen, W. & Broekaert, E. (2009). Exploratory study on drug users' perspectives on quality of life: More than health-related quality of life? *Social Indicators Research, 90*(1), 107-126.

Drake, R.E., Mueser, K.T. & Brunette, M.F. (2007). Management of persons with co-occurring severe mental illness and substance use disorder: program implications. *Word Psychiatry, 6*(3), 131-136.

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). (2000). *Treatment Demand Indicator Protocol 2.0.* Lisboa: EMCDDA.

Fischer, B., Rehm, J., Kim, G. & Kirst, M. (2005). Eyes wide shut? – A conceptual and empirical critique of methadone maintenance treatment. *European Addiction Research, 11*(1), 1-9.

(Goorisen, pers comm.).

Koo, D.J., Chitwood, D.D. & Sanchez, J. (2007). Factors for employment: A case-control study of fully employed and unemployed heroin users. *Substance Use & Misuse, 42*(7), 1035-1054.

Hopwood, C.J., Thomas, K.M., Markon, K.E., Wright, A.G.C. & Krueger, R.F. (in press). DSM-5 Personality Traits and DSM-IV Personality Disorders. *Journal of Abnormal Psychology*.

Kokkevi, A., Stefanis, N., Anastasopoulou, E. & Kostogianni, C. (1998). Personality disorders in drug abusers: Prevalence and their association with AXIS I disorders as predictors of treatment retention. *Addictive Behaviors, 23*(6), 841-853.

Verdejo-García, B., Rivas-Péreza, C., López-Torrecillasa, F. & Pérez-García, M. (2001). Differential impact of severity of drug use on frontal behavioral symptoms. *Addictive Behaviors, 31*(8), 1373-1382.

Meyer, G., Finn, S.E., Eyde, L.D., Kay, G.G., Moreland, K.L., Dies, R.R., … Reed, G.M. (2001). Psychological Testing and Psychological Assessment: A Review of Evidence and Issues. *American Psychologist, 56*(2), 128-165.

Perry, J.C. (1992). Problems and considerations in the valid assessment of personality disorders. *American Journal of Psychiatry, 149*(12), 1645-1653.

Rounsaville, B.J., Dolinsky, Z.S., Babor, T.F. & Meyer, R.E. (1987). Psychopathology as a predictor of treatment outcome in alcoholics. *Archives of General Psychiatry, 44*(6), 505-513.

Schensul, J.J., Convey, M. & Burkholder, G. (2005). Challenges in measuring concurrency, agency and intentionality in polydrug research. Addictive Behaviors, 30, 571-574.

Schuckit, M., Danko, G.P., Raimo, E.B., Smith, T.L., Eng, M.Y., Carpenter, K.K.T. & Hesselbrock, V.M. (2001). A Preliminary Evaluation of the Potential Usefulness of the Diagnoses of Polysubstance Dependence. *Journal of Studies on Alcohol, 62*, 54-61.

(Vanderplasschen & Lievens, 2009),

(Vanderplasschen et al., 2011).

Vanderplasschen, W., Rapp, R.C., Wolf, J. & Broekaert, E. (2004). The development and implementation of case management for substance use disorders in North America and Europe. *Psychiatric Services, 55*(8), 913-922.

Verheul, R. (2005). Clinical utility of dimensional models for personality pathology. Journal of *Personality Disorders, 19*(3), 283-302.

West, R. (2006). Messages from the Editor: Addiction in 2005, 2006 and beyond. *Addiction, 101*(1), 8-9.