



Findings 5

GENDER SIMILARITIES AND DIFFERENCES IN OUTCOMES AT 1-YEAR

The international literature indicates that men and women entering drug treatment differ in demographic characteristics, drug use histories, offending and psychosocial behaviour patterns. There are mixed findings on gender differences in treatment outcomes, with most large-scale studies showing no differences and other (smaller) studies favouring one gender over the other. To maximise the effectiveness of any treatment programme catering for both men and women, service providers must be aware of, and address, any gender-based variations.

The aim of this paper is to determine whether any such variations exist among a cohort of opiate users in treatment in Ireland. To this end gender differences in the characteristics, problems and 1-year treatment outcomes of 285 opiate users who participated in the ROSIE Study (and completed interviews at the two time periods) are explored.

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KEY MESSAGES

1. Results showed that although men and women started their ROSIE treatment episode at similar ages, they presented to treatment with different problems and characteristics.
2. Women were more likely to be parents and to have additional responsibilities for childcare.
3. Conversely men reported greater drug involvement, longer drug using careers and greater involvement with the criminal justice system.
4. Despite different profiles of problems, men and women reported significant reduction in their drug use and offending behaviour at 1-year follow-up.

INTRODUCTION

Differences in addiction careers and patterns of drug use for women and men have frequently been reported in the literature. For example, it has been observed that women tend to start using alcohol and other drugs at a later age than men, and their boyfriend/partner or spouse often initiates them into use (Hser *et al*, 1987). Women report a shorter transition from drug use to addiction and generally enter treatment sooner than men (Grella & Joshi, 1999; Acharyya & Zhang, 2003; Hernandez-Avila *et al*, 2004).

In addition, there is accumulating evidence that the biological effects of drugs are not always the same for males and females (Acharyya & Zhang, 2003). For example, research suggests that there is a greater cardiovascular sensitivity to the effects of cocaine for women than for men (Lukas *et al*, 1996).

Women drug users have been found to face more problems related to child-rearing as they are usually the primary child-carer (Fiorentine *et al*, 1997). They also tend to have limited incomes, education and job skills (Hser *et al*, 2003; Green *et al*, 2002). Other research has reported

INTRODUCTION (continued)

significantly more psychiatric disorders, particularly affect disorders, among drug using women than men (Teesson *et al*, 2005). More specifically studies have found women have lower self-esteem, heightened anxiety, depression and self-destructive behaviour (Greenfield *et al*, 2007).

Male drug users have been found to be more criminally involved than women, especially when it comes to drug dealing (Gossop *et al*, 2000). They are also more likely than their female counterparts to have been incarcerated and under legal supervision (e.g. on probation).

Relatively few studies have examined treatment outcomes by gender. In the US, findings from the Treatment Outcome Prospective Study (TOPS) indicate that post-treatment outcomes were not predicted by gender, with the exception of employment (Hubbard *et al*, 1989). Similarly the Drug Abuse Treatment Outcome (DATOS) study (Acharyya & Zhang, 2003) found only minimal differences in outcomes between men and women in four drug treatment modalities (methadone, non-methadone outpatients, short-term inpatient & long-term residential). Another US study (Hser *et al*, 2003) found no overall gender difference in 1-year drug and alcohol treatment outcomes but did find gender-specific baseline predictors of treatment outcomes. The UK outcome study NTORS revealed that despite pre-treatment differences between men and women, the variables on which they differed were not strongly or consistently related to outcomes (Stewart *et al*, 2003).

Generally, findings from these large-scale outcome studies indicate similarities in outcomes between men and women despite differences in their characteristics and problems at intake to treatment.

Between 1998 and 2002 approximately 30% of the drug treatment population in Ireland were women (Long *et al*, 2005) and as of November 2007 there were 2,604 women receiving methadone treatment (30% of the methadone population) (HSE, 2008). However, gender is often ignored in Irish research, or only treated as a demographic variable. Consequently, there is a dearth of research on the relationship between gender and drug use problems, how gender influences treatment seeking behaviour and referral into treatment, and whether there are gender differences in treatment outcomes.

The gender differences in the characteristics and problems of drug users identified in the literature raise questions about the extent to which treatment services are able to meet the differing needs of men and women, and about possible differences in the relative effectiveness of treatment interventions. While it is beyond the scope of the ROSIE study to determine whether men and women have different treatment needs, gender differences in treatment intake characteristics and outcomes at 1-year will be explored in this paper.

METHODOLOGY

The ROSIE Study is the first large-scale, prospective, multi-site, drug treatment outcome study in Ireland. The primary aim of the study is to evaluate the effectiveness of treatment and other intervention strategies for opiate users.

Between September 2003 and July 2004, participants were recruited to the study and completed a comprehensive interview at service intake (or as soon as possible thereafter). These interviews were designed to obtain baseline data on drug use and other behaviours. As well as information on background and demographic characteristics, data were collected on patterns of drug use, living situation, education and training, income, offending behaviour and drug-related risk behaviour, along with an assessment of physical and mental health. Participants were re-interviewed at 1-year and 3-years after service intake. These follow-up interviews replicated many of the questions asked at intake interview focusing primarily on behaviour in the three months prior to interview.

The study design did not include random allocation to treatment. A total of 44 agencies, providing approximately 54 services participated in the ROSIE Study. Agencies were purposively sampled to reflect the known geographical spread of provision and range of services in Ireland. Four types of services were included; methadone maintenance (n=215; 53%), medically-supervised detoxification (n=81; 20%), abstinence-based treatment (n=82; 20%) and needle-exchange (n=26; 7%).

STUDY PARTICIPANTS

A total of 404 participants completed ROSIE Study intake interviews; 378 were commencing treatment for their opiate use (excluding the 26 individuals recruited in needle-exchange which is not considered treatment per se). Of these 378 participants 75% (n=285) completed 1-year follow-up interview; 209 (73%) men and 76 (27%) women. These 285 participants are the focus of this paper.

DATA ANALYSIS

In order to explore gender based variations in the data several approaches to the analysis were undertaken. To determine whether there were gender differences in treatment intake demographic and lifetime characteristics of participants, independent t-tests were conducted for continuous variables and chi-square tests for categorical variables (**Table 1**).

Paired t-test analyses were conducted within gender to determine treatment intake and 1-year follow-up comparisons in drug use and other key outcome variables. The p-values for these analyses are presented in **Table 2** and **Table 3** along with the mean difference (in days) in the intake and follow-up frequency of each variable.

A general linear model for a repeated measures design with backward elimination was computed to explore further gender differences in treatment outcomes at 1-year. A total

of 13 outcome variables at 1-year covering outcomes in drug use, physical health, mental health, crime and social functioning were analysed. When modelling each of the 13 outcome variables, 8 co-variables were controlled for, both for that variable's individual effect on the outcome and its possible effect or interaction with other co-variables. The co-variables chosen to reflect key variables were gender, treatment intake modality, previous treatment, parent of child under 18 years, currently employed, health rating, prison history and finally the intake reading of the outcome variables being modelled at 1-year.

Missing data were handled by excluding the cases from the particular analysis. All analysis was conducted using SPSS. Shaded cells (and/or $p < 0.05$) in the Tables indicate statistical significance.

RESULTS

a) Gender differences in intake demographic and lifetime characteristics

Table 1 shows that there were no statistically significant gender differences in the age profile at service intake or in the age at which participants left school. Women were more likely than men to report being parents (70% compared to 50.5% $p < 0.01$); with over half the women (59%) having primary childcare responsibilities compared with only 15% of men ($p < 0.001$). Although women (27%) were proportionately more likely than men (19%) to report living with a drug user, the difference was not statistically significant.

Both men and women reported the use of a range of substances over their drug using careers, with fewer women than men having ever used non-prescribed methadone (80% compared to 90%, $p < 0.05$) and cannabis (90% compared to 98.5% $p < 0.001$). The age of first use of heroin and non-prescribed methadone was similar for men and women. However, men initiated the use of cocaine, benzodiazepines[†], cannabis and alcohol at a significantly younger age than women.

Analysis revealed that more men than women reported having an arrest history (81% compared to 58%, $p < 0.001$). In addition, men (71%) were significantly more likely than women (34%) to have had a history of imprisonment ($p < 0.001$).

There were significant gender differences in treatment modality at intake interview among ROSIE study participants; women were proportionately more likely than men to be recruited to the ROSIE study from within methadone treatment (75% compared to 53%), and men were proportionately more likely than women to be recruited from within abstinence-based treatment (24% compared to 7%).

(b) Gender differences in intake drug use and drug use outcomes at 1-year

Table 1 shows that there were no significant gender differences in the reported use of the seven target drugs at treatment intake. However, men were proportionately more likely than women to have used heroin (81% compared to 74%) and cannabis (67% compared to 57%) in the preceding three months. Similar proportions of men (77%) and women (80%) reported polydrug use. In addition, there was no gender difference in reported injecting drug use.

Analysis also revealed that there were no statistically significant gender differences in the mean number of days participants reported the use of each of the seven target drugs at treatment intake. In other words, the frequency of use of all substances was similar for men and women (**Table 2**).

Treatment intake and 1-year follow-up comparisons presented in **Table 2** show that there were significant reductions in the mean number of days men reported using all target drugs, except crack cocaine. For example, the mean difference in the number of heroin-using days at treatment intake and 1-year for men was 26.5 (days).

There was a significant reduction in the mean number of days women reported using heroin, methadone[†], benzodiazepines[†] and cocaine. However, there were no statistically significant differences in the reported frequency of crack cocaine and cannabis use. Moreover, there was a slight, albeit non-significant, increase (as indicated by the minus sign) in the mean number of days women reported the use of alcohol at 1-year, when compared with use at treatment intake.

Both men and women reported significant reductions in the frequency of injecting drug use. For example, the mean difference in the number of drug injecting days at intake and 1-year was 20 days for women, and 14 days for men.

[†] Non-prescribed.

Table 1: Pre-Treatment: Characteristics and Problems by Gender

Variable	% or Mean (sd)		P value
	Male (n=209)	Female (n=76)	
Demographics			
Age			
18-25 years	39.7	44.7	ns
26-35 years	53.1	42.1	
36-45 years	4.8	10.5	
> 45 years	2.4	2.6	
Mean age	27.6 (5.9)	28.1 (6.8)	ns
Age left school	15.1 (1.8)	15.4 (1.5)	ns
Parent	50.5	70.0	<0.01
Primary childcarer	15.2	59.4	<0.001
^a Homeless	7.8	9.5	ns
^a Living with drug user(s)	19.1	26.8	ns
^b Drug use history			
Heroin	99.0	98.7	ns
Age first used	18.2 (4.0)	19.0 (5.9)	ns
Methadone (non-prescribed)	90.0	79.7	<0.05
Age first used	20.6 (5.4)	21.0 (5.8)	ns
Cocaine	92.8	85.5	ns
Age first used	18.9 (3.7)	22.1 (5.4)	<0.001
Benzodiazepines (non-prescribed)	88.9	82.9	ns
Age first used	18.4 (4.5)	20.1 (5.8)	<0.05
Cannabis	98.5	90.0	<0.001
Age first used	14.1 (2.9)	15.2 (4.1)	<0.05
Alcohol	93.3	93.0	ns
Age first used	13.4 (2.4)	14.5 (2.3)	<0.01
Injecting drug use	75.8	76.3	ns
Age first injected	20.6 (4.4)	21.1 (5.8)	ns
^b Drug use at Treatment Intake			
Heroin	81.4	73.7	ns
Methadone (non-prescribed)	45.4	47.4	ns
Cocaine powder	44.5	44.7	ns
Crack cocaine	16.7	15.8	ns
Benzodiazepines (non-prescribed)	43.6	44.7	ns
Cannabis	66.8	57.1	ns
Alcohol	58.2	55.6	ns
Polydrug use	76.6	80.3	ns
Injecting drug use	42.0	43.4	ns
Criminal history			
Ever arrested	80.8	57.7	<0.001
Ever in prison	71.2	33.8	<0.001
Offending at Treatment Intake			
^b Acquisitive crime	30.3	33.8	ns
^b Drug selling/dealing	31.4	27.3	ns
^a Legal problems	52.5	30.6	<0.001
Treatment history			
Previous drug treatment	88.9	82.9	ns
Age first treatment	21.2 (5.6)	21.8 (6.5)	ns
Previously on methadone	55.8	61.8	ns
ROSIE treatment modality			
Methadone Maintenance/Reduction	52.6	75.0	<0.001
Detoxification	23.0	18.4	
Abstinence-based	24.4	6.6	

^a Refers to circumstances at Intake interview.

^b Refers to behaviour in the three months prior to intake interview.

A **P value** of less than <0.05 denotes a statistically significant gender difference.

ns denotes no statistical significance.

Table 2: Drug Use Outcomes: Intake differences by gender and changes at 1-year within gender

	Intake - Follow-up difference in mean number of days		Intake gender differences
	Male (n=209)	Female (n=76)	
Drugs	<i>Mean days</i>	<i>Mean days</i>	<i>P value</i>
Heroin	26.5	30.9	ns
¹ Methadone	7.8	13.4	ns
² Benzodiazepines	11.9	6.5	ns
Cocaine	2.9	7.4	ns
Crack	0.8	3.4	ns
Cannabis	10.2	6.3	ns
Alcohol	5.2	-0.2	ns
Injecting drug use	13.9	19.8	ns

¹ Refers to non-prescribed methadone
² Refers to non-prescribed benzodiazepines
* Shaded cell indicates statistically significant difference between intake and 1-year within gender
ns denotes not statistically significant

c) Gender differences in intake offending and crime outcomes at 1-year

Comparisons by gender of pre-treatment involvement in crime are presented in **Table 1**. Women were proportionately more likely than men to report having committed an acquisitive crime (34% compared to 30%) and men were proportionately more likely than women to report having dealt drugs (31% compared to 27%). Although the gender differences in reported involvement in acquisitive crime and drug selling were not statistically significant, men were significantly more likely than women to report having legal problems at treatment intake (52.5% compared to 31%, p<0.001).

Table 3 illustrates that not only were men more likely to report drug dealing than women at treatment intake, they reported dealing drugs on significantly more (mean) days than women (14.7 days versus 7.2 days). Looking at the frequency of individual acquisitive crimes (e.g. theft from a person, theft of a vehicle, theft from a vehicle) analysis revealed that the only gender difference was in the frequency of shop-lifting. Women reported committing theft from a shop/commercial property on significantly more (mean) days than men at treatment intake (15.8 days compared to 2 days).

Treatment intake and 1-year comparisons show that there were significant reductions in the mean number of days women reported both drug dealing and shop lifting. Among men there was a significant reduction in the mean number of drug dealing days at 1-year.

Table 3: Crime and Health Outcomes: Intake differences by gender and changes at 1-year within gender

	Intake - Follow-up difference in mean number of days		Intake gender differences
	Male (n=209)	Female (n=76)	
Crime	<i>Mean days</i>	<i>Mean days</i>	<i>P value</i>
Drug selling	9.3	6.6	<0.05
Theft from shop/ commercial property	1.3	10.3	<0.01
Health			
Suddenly scared for no reason	6.6	7.7	ns
Feeling fearful	8.2	0.1	ns
Feeling hopeless about future	8.6	7.2	ns
No interest in things	6.2	4.5	ns
Poor appetite	12.3	12.8	ns
Nausea	-1.6	2.5	ns
Stomach pains	1.8	-3.6	ns
Stayed overnight in hospital	0.5	-0.2	ns
Attended GP	-1.2	-1.4	ns

A **P value** of less than <0.05 denotes a statistically significant gender difference
ns denotes no statistical significance

(d) Gender differences in intake health symptoms and health outcomes at 1-year

Analysis revealed that there were no significant gender differences in the reported frequencies (measured in mean days) of the individual health symptoms or in the frequency of reported contact with health services at treatment intake (**Table 3**).

Treatment intake and 1-year comparisons showed that there were significant reductions in the mean number of days men experienced two anxiety-related symptoms (suddenly scared for no reason, and feeling fearful) and one depressive symptom (feeling hopeless about the future). Although there were reductions in reported mental health symptoms among women, none were statistically significant.

In terms of physical health both men and women reported a significant reduction in the mean number of days they experienced poor appetites. Although not statistically significant there was an increase in the mean number of days men reported experiencing nausea and women reported experiencing stomach pains at 1-year. Finally, women reported a significant increase (as indicated by the minus sign) in the mean number of days they had contact with a general practitioner at 1-year.

In spite of 13 outcome variables being modelled and controlling for co-variables only two variables demonstrated significant gender effects, cannabis use and drug dealing.

Firstly, the use of cannabis at 1-year demonstrated significant gender by treatment modality effects. Men recruited within the methadone modality used cannabis on significantly more mean days than women (44.4 compared to 28.3) at 1-year. Conversely, women used cannabis on significantly more mean days than men within the detoxification modality (30 compared to 20.5) and the abstinence modality (5.6 compared to 0.05). Secondly, drug dealing at 1-year demonstrated a significant gender effect; men reported dealing drugs on significantly more mean days than women (5.6 compared to 0.05).

SUMMARY AND IMPLICATIONS

The data presented in this paper examine gender differences among a sample of opiate users at treatment intake and 1-year follow-up. The findings and their implications are summarised below.

Do women present to treatment with a different profile of problems than men?

Many of the findings are consistent with international research which shows that women present to treatment with a different profile of problems to men (Stewart *et al*, 2003; Chatham *et al*, 1999; Powis *et al*, 1996).

The women on the ROSIE study were significantly more likely than the men to be parents, and to have additional responsibility for childcare. Childcare responsibilities often emerge in the literature as a barrier to women accessing treatment. However, there is evidence to support the contrary; rather than inhibiting treatment seeking, a major motivating force for women to enter treatment can be concern over their children's welfare (Klein, 1996; Swift *et al*, 1996). That said, the most important obstacle to women actually entering treatment has been found to be the lack of childcare facilities within treatment services (Rosenbaum & Murphy, 1981). It is important to encourage women drug users with children to enter treatment. Consequently, drug treatment programmes must accommodate women's childcare needs, adequately address parenting issues and provide advice and information on safe storage of drugs and injecting paraphernalia. Where the type or extent of these needs exceeds the capacity of any one agency to provide a comprehensive response, collaborative links between agencies should be established and strengthened.

As in other research, the men on the ROSIE study reported greater drug involvement and longer drug using careers than the women; they initiated cocaine, benzodiazepines[†], cannabis and alcohol use at a significantly younger age than their female counterparts. Although women had shorter drug using careers than the men, there were no significant gender differences in pre-treatment drug use. This may indicate that women progress to problematic drug use and dependency quicker than men. Given their shorter drug using careers, it is worrying that the women were as likely as the men to report the use of all target drugs in the preceding three months. Moreover, there was no gender difference in the frequency of reported use (measured

in mean days) of these drugs. The women were also as likely as the men to be injecting drug users and polydrug users.

Similar to the findings of other studies the men on the ROSIE study were more likely to have been in prison, to have been arrested and to have had legal problems at treatment intake (Stewart *et al*, 2003). Men's involvement in the criminal justice system may influence their routes into treatment and their motivation for accessing treatment. In addition, gender differences were observed in levels of involvement in the two pre-treatment crime variables; men dealt drugs on more days than women, and women committed theft from a shop on more days than men. These findings have been replicated in the international research.

Are there gender differences in treatment outcomes?

Both the men and the women on the ROSIE study showed substantial reductions in drug use at 1-year; significant reductions in the frequency of use (measured in mean days) of heroin, methadone[†], benzodiazepines[†] and cocaine were observed. In addition, the mean number of days men and women reported injecting drug use reduced at 1-year. However, some gender differences were observed in drug use outcomes. Although there were reductions in cannabis and crack use among women, the differences were not statistically significant. In addition analysis revealed that women recruited within both the detoxification and the abstinence-based modalities used cannabis on significantly more mean days than men at 1-year.

On the other hand, although there were significant reductions in cannabis use among men, within the methadone modality men used cannabis on more mean days than women at 1-year. Research suggests that cannabis use rates among methadone-maintained individuals are high (Calsyn & Saxon, 1999). The available evidence suggests that it only marginally affects treatment outcomes (Seivewright, 2003) demonstrating a weak association with psychosocial problems at post-treatment follow-up (Epstein & Preston, 2003). However, research does indicate that opiate-dependent cannabis users are more likely to be involved in drug dealing than non-cannabis users (Budney *et al*, 1998).

There was a gender difference in outcomes for alcohol consumption. Although similar proportions of men (58%) and women (56%) reported alcohol use at treatment intake and there was no gender difference in the frequency of alcohol use, women's reported alcohol use increased slightly at 1-year. In contrast there was a significant reduction in the mean number of days men reported drinking. Alcohol consumption has important health implications for drug users. High rates of hepatitis B and C among injecting drug users is known to elevate the risk to health of excessive drinking. Alcohol also increases the risk of overdose when used with other sedative drugs (Gossop *et al*, 2002) including methadone (Man *et al*, 2004). This is of particular concern as women in the ROSIE study were more likely to be in methadone treatment and research shows that the threshold for fatal methadone overdose is lowered by alcohol, especially for females (Oliver *et al*, 2007), suggesting that female methadone-maintained

[†] Non-prescribed.

clients who use alcohol may have an elevated risk of fatal overdose. The poor outcomes for alcohol consumption among women on the ROSIE study highlights a need for treatment services, in particular methadone service providers, to continuously assess and actively target drinking behaviour.

Some improvements were observed in the physical and mental health complaints of ROSIE study participations at 1-year, but there were some gender variations in the extent of these changes. Men reported greater reductions in the frequency of anxiety and depression related health symptoms, despite there being no significant gender difference in the frequency of these symptoms at treatment intake.

Reductions in offending behaviour were more marked for women than men. This gender difference in crime outcome

may in part relate to differences in the pattern of criminal behaviour between men and women in the ROSIE sample.

At treatment intake women were more likely than men to commit an acquisitive crime and less likely to report involvement in drug dealing. As in other studies the most commonly committed acquisitive crime was shop-lifting (Stewart *et al*, 2003). There were significant reductions in women's involvement in both shoplifting and drug dealing at 1-year.

Conversely, men reported a greater involvement in drug dealing at treatment intake. Although there was a significant reduction in reported drug dealing among men at 1-year, they remained more involved in dealing drugs than women.

CONCLUSIONS

As in other studies, what is most striking are the similarities in outcomes for men and women on the ROSIE study, given the differences in their characteristics at treatment intake. The lack of association between pre-treatment gender differences in problems and treatment outcome has been described as the 'gender paradox' (Fiorentine *et al*, 1997).

It is important that treatment programmes are able to respond to the needs of their client group. The extent to which treatment services in Ireland are actually tailored to the differing needs of men and women, as indicated by pre-treatment characteristics, has yet to be explored. Nonetheless, the results of the ROSIE study are encouraging in that the men and women who participated reported substantial reductions in their drug use at 1-year. Some improvements were also observed in health related symptoms, and reductions in offending behaviour were reported.

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