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**Foreword** | *Perceptions about the mining industry and the rapid growth of mining communities in Australia has led to concerns that these communities are prone to higher rates of intimate partner violence than the general community. This paper provides a summary of research that examined the nature and prevalence of intimate partner abuse of women in Central Queensland's Bowen Basin region. Using data collected in June and July 2007 via telephone interviews, the survey asked about socio-demographic, relational, behavioural and health characteristics of participants. Of the 532 women surveyed, 11.5 percent had experienced physical abuse and 31.4 percent had experienced non-physical forms of abuse. A number of characteristics were found to be significantly associated with abuse. For example, depression was significantly associated with sexual assault and both depression and severe psychological symptoms were significantly correlated with all other forms of abuse. However, contrary to concerns expressed by human service providers, the study suggests that women in mining cultures do not experience greater levels of abuse than do women in the general community.*

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## Intimate partner abuse of women in a Central Queensland mining region

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The rapid growth of mining communities in Australia in recent years has led to concern from human service providers about the social impacts of the mining industry, including the impacts on mining families. Workers in domestic violence support services have been particularly concerned about the safety of women in intimate partner relationships. These concerns arise from perceptions about the mining industry and the relationship between intimate partner abuse and patriarchal attitudes; and intimate partner abuse and excessive alcohol use.

Perceptions about the mining industry include that shift work and commuting patterns place excessive strain on family relationships (Gibson 1994; Grosswald 2003); that mining is associated with a patriarchal culture which encourages expressions of male power over women (Collis 1999; Gibson 1994); and that mine workers engage in risky patterns of alcohol consumption (Iverson & Maguire 2000). Intimate partner abuse is predominantly perpetrated by men against their female partners (Access Economics 2004) and is widely accepted to be a manifestation of patriarchal attitudes and gender inequality that support men's control over women. Mouzos and Makkai (2004) found that women whose partners got drunk at least twice a month experienced higher levels of violence (between 4% and 7%), while Browne (cited in Mouzos & Makkai 2004) found that abusive males with alcohol or drug problems inflict violence against their partners more frequently, and are more likely to inflict serious injuries and to sexually assault their partners, than are abusers without a history of substance abuse.

Presented here is a brief summary of research that explored the nature and prevalence of intimate partner abuse of women in Central Queensland's Bowen Basin region. By mid-2006, the region had 37 operational coal mines and a further 21 were under development or active consideration (Natural Resources and Mines 2006). In 2006, the Bowen Basin had a permanent resident population of 69,119 (ABS 2006) with a further 10,763 non-resident



workers estimated to be present on any given night (Planning Information and Forecasting Unit 2006). Most of these workers maintained permanent residences in coastal cities, the largest of which, Mackay, had a population of 84,890 (ABS 2006). Intimate partner abuse is defined in various ways in the literature, with the variation centred on the range of relationships included. Most definitions include current or former marital and de facto partners, while others also include 'dating' relationships. This study is limited to women currently in a marital or de facto heterosexual relationship. Consistent with legislative definitions across Australia, and as discussed below, abuse is defined as including threatened or actual physical abuse and various forms of non-physical abuse.

## Data collection and analysis

Data for the project were collected in June and July 2007 through a CATI (Computer Assisted Telephone Interview) survey. Logistic regression analysis, the results of which are expressed as an odds ratio (OR), was used to identify statistically significant correlations between experiences of intimate partner abuse, socio-demographic, relational and behavioural factors, and physical and mental health status. Briefly, the OR is a way of comparing whether the probability of a certain event is the same for two groups. The 95 percent confidence intervals (CI) provide the range within which it can be 95 percent certain new findings would fall, if the survey were repeated.

## Interview schedule

A set of 10 questions from the revised Conflict Tactics Scale (CTS2; Straus et al 1996) was used to measure women's experiences of physical abuse. The CTS2 incorporates sexual abuse and acts involving threatening to hit with a fist or anything else, throwing things that could cause harm, slapping, pushing, hitting, kicking, beating, choking and threatening with a weapon such as a gun or knife. These were further categorised into all physical abuse (any of the aforementioned);

severe physical abuse (hitting, kicking, beating, choking, threatening with a weapon); and sexual abuse (forced/coerced sexual activity). Women who responded affirmatively to any question on physical abuse were also asked if the act had occurred within the past 12 months.

Another set of 10 questions was drawn from the General Social Survey on Victimization, Canada (Johnson & Bunge 2001) to measure non-physical abuse. This included economic abuse (acts that limit the female partner's access to the family income and resources and deprive her of spending money in an independent way); psychological abuse (behaviours that could belittle, demoralise or frighten the woman or make her feel bad); and socio-psychological abuse (characterised by jealousy and controlling behaviours that limit social interaction).

The survey also asked about:

- socio-demographic characteristics of women and their partners including place of residence (current and prior to coming to the region), employment status, industry employed in, income level, length of the relationship, age, number of children and level of education
- relational characteristics including distribution of household chores and childcare, financial management strategies and levels of debt
- behavioural characteristics including consumption of alcohol, tobacco and other drugs, and gambling
- physical and mental health status as measured by the SF-12 Health Survey (Ware, Kosinski & Keller 1996, 1998; Ware et al 2007).

Finally, the survey included questions on awareness and use of local counselling and support services for women. Women who self-identified as having been abused were asked if they had ever considered ending the relationship and what influenced their continuing the relationship.

## Sample

The survey sample comprised 532 women over the age of 18 years living in a current intimate relationship with a man. The

sample was stratified to ensure adequate representation of women from inland towns and that at least half of the 115 Mackay women in the sample were partnered to men employed in mining. The sample is not, therefore, strictly representative of the entire Bowen Basin population unless weighted to reflect these stratification strategies. Within the sample, 54.5 percent of the male partners were employed in mining.

## Key findings and discussion

### Prevalence of intimate partner abuse

Of the women surveyed, 11.5 percent (n=61) had experienced physical abuse, 3.2 percent (n=17) had experienced severe physical abuse and 4.1 percent (n=22) had experienced some form of physical abuse during the preceding 12 months. Sexual abuse was reported by 2.4 percent (n=13) of the women surveyed and non-physical forms of abuse were reported by 31.4 percent (n=167) of them.

To place these results in some sort of context, the Australian component of the 2002 International Violence Against Women Survey (IVAWS) found that, nationally, 10 percent of women with an intimate partner reported physical abuse at some stage in the current relationship, three percent reported physical abuse within the preceding 12 months and 37 to 40 percent reported non-physical abuse (Mouzos & Makkai 2004). These results are not directly comparable with the Bowen Basin study as the IVAWS used a more expansive definition of intimate partners which included non-cohabiting intimate relationships.

Consequently, it is possible that the higher percentage of non-physical abuse reported in the IVAWS is not actually reflective of lower prevalence of such abuse in the Bowen Basin, but of the reduced likelihood that abusive non-cohabiting relationships will proceed to a co-habiting relationship. This proposition is supported by the evidence in both studies that abuse is more prevalent in de facto relationships compared to marital relationships and in relationships less than five years in length, compared to relationships of 15 years or longer. This

caveat notwithstanding, it is worth noting that the prevalence of intimate partner abuse nationally and within the Bowen Basin, as reported in these two studies, is broadly similar.

### Correlates of abuse

For the sake of brevity, only statistically significant correlates are discussed below, with the odds ratios and 95 percent confidence intervals (both rounded) incorporated in the respective tables.

#### Socio-demographic and relational correlates

As shown in Table 1, a variety of socio-demographic and relational characteristics were significantly correlated with women's experiences of some form of abuse perpetrated by their current partner.

These included men being employed in mining and having been raised in mining towns, marital status, length of relationship, women's age, men's level of education, women's child care responsibilities, the presence of children in the home, joint debt and women's lack of access to a joint bank account.

The form of abuse most commonly associated across these characteristics was socio-psychological abuse, being significantly associated with all but joint debt. Socio-psychological abuse was most strongly associated with length of relationship, women being solely or mostly responsible for children, de facto status, women's age and women having no access to a joint bank account. The risk of experiencing socio-psychological abuse was:

- four times greater for women in a relationship fewer than five years in length compared to women in a relationship longer than 15 years
- more than three times greater for women solely or mostly responsible for children compared to those whose partners shared this responsibility
- nearly three times greater for women in de facto relationships compared to married women
- more than twice as high for women aged less than 30 years, compared to those over 30 years
- more than twice as high for women who did not have access to a joint bank account compared to those who did.

Women whose partners grew up in mining towns were nearly twice as likely to

	Physical abuse at any time	Severe physical abuse	Physical abuse in preceding 12 months	Non-physical abuse	Psychological abuse	Socio-psychological abuse	Economic abuse
Partner in mining industry (n=290; 54.5%) and lives in Mackay	–	–	–	–	–	<b>OR=1.8</b> (CI 1.1, 2.7) p<0.05 / lives Mackay <b>OR=3.5</b> (CI 1.3, 9.2) p<0.05	–
Partner grew up in mining town (n=87; 16.4%)	–	–	–	–	–	<b>OR=1.9</b> (CI 1.1, 3.3) p<0.02	–
De facto (n=71; 13.3%)	<b>OR=2.1</b> (CI 1.1, 4.1) p<0.05	–	<b>OR=3.2</b> (CI 1.2, 8.2) p<0.05	<b>OR=1.8</b> (CI 1.1, 3.0) p<0.05	–	<b>OR=2.7</b> (CI 1.5, 4.6) p<0.001	–
Years in relationship <5 vs >15	–	–	–	<b>OR=2.0</b> (CI 1.1, 3.5) p<0.05	–	<b>OR=4.0</b> (CI 2.1, 7.5) p<0.01	–
Aged <30 years (n=78; 14.7%)	<b>OR=2.1</b> (CI 1.1, 4.0) p<0.03	<b>OR=4.4</b> (CI 1.8, 10.7) p<0.01	<b>OR=4.3</b> (CI 1.6, 11.8) p<0.01	<b>OR=1.6</b> (CI 1.0, 2.6) p<0.05	–	<b>OR=2.3</b> (CI 1.33, 3.9) p<0.01	–
Partner had no technical or higher education (n=212; 39.8%)	–	–	<b>OR=4.9</b> (CI 1.4, 16.8) p<0.05	<b>OR=1.5</b> (CI 1.0, 2.2) p<0.05	–	<b>OR=1.9</b> (CI 1.2, 3.0) p<0.05	–
Woman solely or mostly responsible for children (n=344; 64.6%)	<b>OR=2.1</b> (CI 1.0, 4.2) p<0.03	–	–	<b>OR=2.4</b> (CI 1.5, 3.8) p=0.000	<b>OR=1.8</b> (CI 1.1, 3.1) p<0.02	<b>OR=3.2</b> (CI 1.9, 5.5) p=0.000	–
1 or 2 children living at home	–	–	–	–	–	<b>OR=2.8</b> (CI 1.3, 5.8) p<0.05	–
3 or more children living at home	–	–	–	–	–	<b>OR=3.8</b> (CI 1.7, 8.3) p<0.05	–
Joint debt (\$0–100,000) (n=286; 53.7%)	<b>OR=3.7</b> (CI 1.7, 7.6) p<0.01	–	–	<b>OR=1.7</b> (CI 1.0, 2.8) p<0.05	<b>OR=2.3</b> (CI 1.3, 4.0) p<0.01	–	–
No access to a joint bank account (n=77; 14.5%)	–	–	<b>OR=3.7</b> (CI 1.4, 9.0) p<0.01	<b>OR=1.9</b> (CI 1.1, 3.1) p<0.02	–	<b>OR=2.2</b> (CI 1.2, 3.7) p<0.01	<b>OR=4.3</b> (CI 1.6, 10.8) p<0.01

Note: OR=odds ratio, CI=confidence intervals. Numbers have been rounded to first decimal place.

Source: Nancarrow, Lockie & Sharma (forthcoming)

experience socio-psychological abuse as those whose partners grew up elsewhere. Significant associations with socio-psychological abuse were also found for male partners being employed in mining, the male partner's level of education and having children living at home. The risk of socio-psychological abuse was:

- nearly twice as high for women whose partners worked in mining and three and a half times greater for women living in Mackay whose partners worked in mining
- nearly twice as high for women whose partners had no formal education beyond senior high school
- nearly four times greater for women who had three or more children and nearly three times greater for women with one or two children living at home compared to women without children living at home.

Several of the socio-demographic and relational characteristics were also significantly correlated across physical and other non-physical forms of abuse. Specifically, women in de facto relationships, women aged less than 30 years, women solely or mostly responsible for children, women with joint debt up to \$100,000 and women with no access to a joint bank account had increased risk of physical and non-physical forms of abuse. In addition to being at greater risk of socio-psychological abuse, the risk of having been physically abused in the preceding 12 months was statistically significant for women in a de facto relationship (more than 3 times greater), women aged less than 30 years (more than 4 times greater), women whose partners had no technical or tertiary education (nearly 5 times greater) and women with no access to a joint account (nearly 4 times greater).

### Behavioural correlates

Consumption of cannabis at least twice a month and cigarette smoking by either women or their male partners and male partners' risky drinking were all significantly correlated with physical and non-physical forms of intimate partner abuse against women. As shown in Table 2, only a small number of men and women were identified as regular consumers of cannabis, but

**Table 2** Behavioural risk factors by type of intimate partner abuse

	Physical abuse at any time	Severe physical abuse	Physical abuse in preceding 12 months	Non-physical abuse	Psychological abuse	Socio-psychological abuse
Partner regularly consumed cannabis (n=7; 1.3%)	<b>OR=20.9</b> (CI 3.9, 110.4) p=0.00	<b>OR=27.3</b> (CI 5.5, 134.0) p=0.00	<b>OR=10.1</b> (CI 1.8, 55.2) p<0.05	<b>OR=5.0</b> (CI 1.0, 29.1) p<0.05	–	<b>OR=9.3</b> (CI 0.8, 48.7) p=0.008
Woman regularly consumed cannabis (n=8; 1.5 %)	<b>OR=4.8</b> (CI 1.1, 20.6) p<0.05	–	–	<b>OR=6.7</b> (CI 1.3, 33.8) p<0.05	–	–
Partner drank at a risky level (n=293; 59.9%)	<b>OR=2.0</b> (CI 1.1, 3.8) p<0.05	–	–	–	<b>OR=1.6</b> (CI 1.0, 2.5) p<0.05	–
Partner smoked (n=134; 25.2%)	<b>OR=2.7</b> (CI 1.5, 4.6) p=0.000	<b>OR=7.7</b> (CI 2.6, 22.3) p=0.000	<b>OR=4.6</b> (CI 1.9, 11.1) p=0.001	<b>OR=2.023</b> (CI 1.3, 3.0) p=0.001	–	–
Woman smoked (n=103; 19.3%)	–	<b>OR=3.9</b> (CI 1.4, 10.4) p=0.006	–	<b>OR=2.1</b> (CI 1.3, 3.3) p=0.001	–	<b>OR=1.6</b> (CI 1.0, 2.6) p<0.05

Note: OR=odds ratio, CI=confidence intervals. Numbers have been rounded to first decimal place.

Source: Nancarrow, Lockie & Sharma (forthcoming)

logistic regression showed men's use of cannabis to consistently be the greatest risk for physical and non-physical forms of intimate partner abuse. Women whose partners regularly consumed cannabis were nearly 21 times more likely to have experienced physical abuse, more than 27 times more likely to have experienced severe physical abuse and over nine times more likely to have experienced socio-psychological abuse. Associations between physical and non-physical forms of abuse and men's and women's smoking were also very strong. The risk of severe physical abuse was nearly eight times greater where men smoked and nearly four times greater where women smoked; and the risk of non-physical abuse doubled where either the woman or her male partner smoked.

Male partners' risky drinking (classified on the basis of Bush et al (1998) Audit-C scale and using cut-off scores found by Gual et al (2002) to be the best correlation with a clinical diagnosis of risky drinking), was also significantly correlated with physical and non-physical abuse. Women were twice as likely to experience physical abuse and one and a half times more likely to experience psychological abuse where their partners' drinking was classified as risky.

While the magnitude of the correlation between abuse and men's regular use of cannabis was much greater than risky

drinking, a greater number of women were exposed to the increased risk of abuse associated with risky drinking. That is, just over one percent of the women's partners regularly consumed cannabis, while nearly 60 percent were classified as risky drinkers. The association between the experience of abuse and women's use of tobacco and cannabis is not surprising. VicHealth (2004), for example, found that alcohol problems, smoking and use of drugs (prescribed and non-prescribed) are more likely to be present among women affected by intimate partner violence. However, further research on the association between men's use of cannabis and abuse of female partners is required to understand the direction and nature of that association.

### Health status

While the experience of intimate partner abuse had no significant bearing on the overall physical health of women at a population level, it had a substantial bearing on women's mental health.

Table 3 shows the results of the SF-12 for mental health, using the Mental Component Summary (MCS) cut off scores for severe psychological symptoms ( $\leq 36$ ) and depression ( $\leq 45$ ), determined by Gill et al (2007) as appropriate for epidemiological studies. Women who had experienced physical abuse were between four and

**Table 3** Intimate partner abuse by severe psychological symptoms and depression

Type of abuse	MCS ≤36 Severe psychological symptoms		MCS >36 and ≤45 Depression	
	(n)	(%)	(n)	(%)
<b>Physical abuse</b>				
At any time	13	21.3	9	14.8
	<b>OR=4.4</b> (CI 2.1, 9.1), p=0.000		<b>OR=3.6</b> (CI 2.0, 6.5), p=0.000	
Severe	8	47.1	3	17.6
	<b>OR=10.6</b> (CI 4.2, 26.9), p=0.000		<b>OR=8.8</b> (CI 3.6, 21.3), p=0.000	
Last 12 months	9	40.9	4	18.2
	<b>OR=13.3</b> (CI 4.8, 37.0), p=0.000		<b>OR=10.9</b> (CI 3.9, 30.4), p=0.000	
Sexual	2	15.4	4	30.8
	–		<b>OR=4.7</b> (CI 1.563, 14.579), p=0.00	
<b>Non-physical abuse</b>				
Economic	5	25.0	4	20.0
	<b>OR=4.5</b> (CI 1.5, 13.2), p= 0.006		<b>OR=4.7</b> (CI 1.8, 11.7), p=0.001	
Psychological	19	16.4	15	12.9
	<b>OR=3.6</b> (CI 1.9, 7.1), p=0.000		<b>OR=2.9</b> (CI 1.8, 4.8), p=0.000	
Socio-psychological	21	20.6	15	14.7
	<b>OR=5.6</b> (CI 2.8, 10.8), p=0.000		<b>OR=4.2</b> (CI 2.5, 7.0), p=0.000	
Non-physical	27	16.2	21	12.6
	<b>OR=5.2</b> (CI 2.6, 10.3), p=0.000		<b>OR=3.5</b> (CI 2.2, 5.7), p=0.000	

Note: OR=odds ratio, CI=confidence intervals. Numbers have been rounded to first decimal place.

Source: Nancarrow, Lockie & Sharma (forthcoming)

13 times more likely to show evidence of severe psychological symptoms, with the risk increasing with severity and proximity of the abuse. A similar pattern was observed in regard to depression and the severity and proximity of physical abuse, with the risk of depression ranging between three and nearly 11 times greater for women who had been physically abused. Women who had been sexually abused were also more than four and a half times more likely to experience depression.

Women who had experienced non-physical abuse were four and a half to five and half times more likely to suffer severe psychological symptoms than those who were not abused and nearly three times to over four and a half times more likely to suffer depression. Socio-psychological abuse was the highest risk factor (OR=5.6) for severe psychological symptoms, while economic abuse was the highest risk factor (OR=4.7) for depression.

### Help seeking

Considering the poor mental health outcomes associated with experiences of violence, it is particularly concerning that only 16 women sought the help of a local specialist support service. This was fewer

than half of the 39 women who had been physically abused and who knew of a local specialist support service. The same was true for women who reported non-physical abuse, where of the 108 women who knew of a local specialist support service, only 38 sought that service's help.

These findings point to the need for specialist services to consider how they are promoted in their local communities and what attracts or repels women affected by intimate partner abuse in regard to accessing such services. Further, health professionals should suspect the likelihood of intimate partner abuse for female clients presenting with depression and severe psychological symptoms and have the knowledge and skills to screen for violence and respond appropriately. A number of other mainstream services may also be well placed to respond to intimate partner abuse if they have specialist knowledge and skills available within their services.

### Conclusion

This study has found the prevalence of abuse of women by their intimate male partners in the Bowen Basin region to be as generally expected, based on levels of

abuse evident nationally. Contrary to concerns expressed by service providers, this study suggests that mining cultures had no demonstrable association with women's experience of most forms of abuse. While women whose partners were in the mining industry were significantly more likely to experience socio-psychological abuse, this association was relatively weak and must be seen in the context of much more significant influences. Prominent among these was de facto relationship status, women's age, male partners' education, regular consumption of cannabis (particularly but not only by the male partner) and alcohol consumption patterns. These were the strongest and most consistent risk factors across various physical and non-physical forms of abuse, with the magnitude of increased risk greatest in regards to male partners' use of cannabis, while the doubling of risk associated with risky drinking affected a greater number of women.

The study found depression to be significantly correlated with sexual assault and both depression and severe psychological symptoms to be significantly correlated with all other forms of abuse. Despite this, the majority of women who had experienced physical abuse or non-physical abuse, and who knew about local specialist services, had not sought assistance from those services. Specialist services need to consider the implications for the way in which their services are promoted to local communities; and mainstream services, particularly health services, need specific knowledge and skills to screen for and appropriately respond to intimate partner abuse.

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