

# Women's perceptions of their husband's drinking behavior as a risk factor of their health-related quality of life in the postpartum period

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## Abstract

**Purpose** The objective of this study is to investigate the association between women's perceptions of their husband's drinking behavior and their health-related quality of life (HRQOL) in the postpartum period.

**Methods** We used multistage stratified systematic sampling to recruit 24,200 pairs, postpartum women and newborns, from the Taiwan national birth register in 2005. A structured questionnaire to assess lifestyle risk behaviors and HRQOL was successfully administered to 87.8% of the

sampled population. Subjects undertook a home interview 6 months after their deliveries between June 2005 and July 2006. The Medical Outcomes Study 36-item Short-Form (SF-36) was used to measure the HRQOL of the wives, and the scores were used to look for associations with their perceptions of husband's alcohol-drinking behavior.

**Results** After controlling for the potential confounders, wives' scores on all SF-36 scales except the PF scale were inversely associated with the frequency of their husbands' alcohol drinking. Moreover, the MCS measure was also inversely associated with in the frequency of their husbands' alcohol drinking but the PCS did not show any association.

**Conclusions** Our study adds evidence supporting the negative association between of husbands' alcohol drinking and their wives' health as measured by the SF-36 HRQOL, especially for mental health.

**Keywords** Health-related quality of life ·  
Husbands' drinking behavior · Postpartum women

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## Abbreviations

BP	Body pain
GH	General health perception
HRQOL	Health-related quality of life
MCS	Mental component summary
MH	Mental health
PCS	Physical component summary
PF	Physical functioning
RE	Role limitations due to emotional problems
RP	Role limitations due to physical health problems
SF	Social functioning
SF-36	36-item short-form health survey
VT	Vitality

## Introduction

Husbands' alcoholic drinking has adverse effects on women's physical and mental health or possibly even family violence. Husbands' alcohol use or problem drinking has been reported to increase women's risks of depressive symptoms [1], psychological distress [2], and a wide range of physical and mental health problems [3]. These effects appear to be at least partially mediated through alcohol-related intimate partner violence [4–7], an issue that has been the focus of much of the recent research on partner alcohol problems and that can lead to decreased marital satisfaction [8] and increased marital problems [9].

Alcohol-related problems are a growing concern in Taiwan. Although alcohol use or alcohol use disorders are less prevalent in Taiwan than in western countries [10], the average per capita alcohol consumption has increased since Taiwan opened its market to foreign alcoholic beverages in 1990 [11]. Taiwan is one of the highest per capita alcohol consuming countries in Asia according to the WHO 2004 Global Status Report on Alcohol [12]. Moreover, studies in recent years also suggest an increase in the prevalence of alcohol use disorders, i.e., 16.5 [13] to 25.7% [14] among nonpsychiatric inpatients in general hospitals. These studies also demonstrated that such disorders have been substantially neglected by medical staff in general hospital settings in Taiwan.

Evidence is limited regarding the association of husbands' alcohol drinking and wives' health-related quality of life (HRQOL) in the general population, especially among postpartum women. We defined HRQOL as the perceived health status and daily functioning associated with changes in health status, and it includes physical and mental health, role limitations, and social functioning. The Medical Outcomes Study 36-item Short-Form (SF-36) measures these health-related constructs [15] and has been used to assess the impact of common chronic conditions in the general population [16]. The objective of this study is to investigate the association between women's perceptions of their husband's alcohol drinking and their HRQOL in the postpartum period.

## Materials and methods

### Study population and sampling strategy

The Taiwan birth cohort study (TBCS), the first national birth cohort study in Taiwan, is a prospective longitudinal cohort study. In the current study, we used a multistage stratified systematic sampling design to obtain representative samples from the Taiwan national birth registration data in 2005. Using the principle of probability proportional to

size, we ranked a total of 369 towns in Taiwan into 12 strata according to the administrative division (four strata) and the total fertility rate (three strata) and randomly sampled 90 of 369 towns in Taiwan. A total of 24,200 pairs of postpartum women and newborns were recruited from 90 towns [17]. All study participants provided informed consent as approved by the Ethics Review Board of the National Taiwan College of Public Health.

### Data collection

Home interviews of 24,200 postpartum women 6 months after their deliveries were conducted by using a structured questionnaire in the period from June 2005 to July 2006. We requested information on age, education, family income, employment status, parity, method of delivery, breastfeeding, postpartum care center, outpatient clinic visits in the past 4 weeks, major nursery by the mother, lifestyle risk factors, and HRQOL. There were 2,952 nonrespondents due to refusal to participate, moving home, incorrect addresses, infant deaths, and other reasons. A total of 21,248 postpartum women were interviewed, and the rate of completed interviews was thus 87.8%.

Analysis was restricted to married women and their infants without major diseases in themselves because factors in unmarried [18] or severely ill women [19, 20], or in women with severely ill infants [21] influence HRQOL. We also excluded women with habits of smoking, drinking, or betel nut chewing to more accurately explore the effect of the husband's habits only [22–24]. We excluded incomplete questionnaires ( $N = 309$ ), women who were not yet married ( $N = 586$ ), women who were handicapped or severely ill ( $N = 160$ ), women with preexisting conditions including diabetes mellitus, heart disease, and hypertension ( $N = 267$ ), women with postpartum depression ( $N = 139$ ), women who had been admitted to the hospital during the 6 months after childbirth ( $N = 269$ ), women with habits of smoking ( $N = 1,030$ ), drinking ( $N = 1,378$ ), or betel nut chewing ( $N = 36$ ), and women who had infants with congenital defects or severe illness ( $N = 1,005$ ). Finally, 16,069 women were included in this study.

### Women's perceptions of their husband's drinking behavior

The information about women's perceptions of their husband's drinking behavior was obtained from the interview questionnaire. We asked women "Does your husband usually drink alcohol?" and "Does your husband drink alcohol three times or more each week?" We divided the subjects into three groups on the basis of women's perceptions of their husband's drinking behavior: 0, 1–2, and

$\geq 3$  times per week [25]. We also asked “How many cigarettes a day does your husband usually smoke?” and, “Does your husband usually chew betel nuts?” The habit of betel-quid chewing is common in South and Southeast Asia and the Asia–Pacific Region. Betel nut chewing is known to be related to several kinds of cancer, type 2 diabetes, hypertension, hyperlipidemia, and cardiovascular disease [26].

#### Health-related quality of life measures

The Medical Outcome Study 36-item Short-Form health survey (SF-36) is a generic HRQOL questionnaire. The Taiwanese version was translated, back translated, and judged for similar meaning, and it demonstrated good reliability and validity in a healthy adult sample [27, 28]. It is identical to the original version 1 of SF-36 and contains 36 items, grouped into the following eight scales: physical functioning (PF, 10 items), role limitations due to physical health problems (RP, 4 items), bodily pain (BP, 2 items), general health perceptions (GH, 5 items), vitality, energy, or fatigue (VT, 4 items), social functioning (SF, 2 items), role limitations due to emotional problems (RE, 3 items), and general mental health (MH, 5 items). The score on each scale ranges from 0 to 100, with a higher score indicating better health or functioning. Scores can also be expressed as the physical (PCS) and mental (MCS) component summary measures, which are standardized to a population normal distribution in Taiwan with a mean of 50 and a standard deviation of 10 [28, 29].

#### Potential confounding variables

We considered confounding factors potentially affecting wives' HRQOL including duration of married life ( $< 3$ ,  $\geq 3$  years), maternal age ( $< 25$ , 25–29, 30–34,  $> 35$  years), education level (junior high school and below, senior high school, and university and above), employment status (yes, no), family income per month ( $< 50,000$ , 50,000–69,999, 70,000–99,999,  $\geq 100,000$  new Taiwan dollars, NT\$, 1 US\$  $\approx$  30.5 NT\$ in 2008), parity (0, 1,  $\geq 2$ ), breastfeeding (ever, never), outpatient clinic visits during the past 4 weeks (yes, no), husband's smoking (yes, no) and betel nut chewing (yes, no), infant low birth weight or preterm (yes, no), and major nursery by the mother (no, daytime, evening or night, whole day).

#### Statistical analysis

Chi-square tests were applied to compare the characteristics of the three groups of subjects separated on the basis of women's perceptions of their husband's alcohol-drinking habit. We analyzed the association between husbands'

alcohol drinking and SF-36 scores by one-way ANOVA. To control for potential confounders, the among-group differences in SF-36 scores were evaluated by the analysis of covariance (ANCOVA) and a least significant difference (LSD) multiple comparisons test. The statistical threshold for significance was set at 0.05. These statistical analyses were performed using SPSS for Windows, Release 12.0.

#### Results

Table 1 presents the characteristics of study subjects separated into three groups on the basis of their perceptions of husband's alcohol drinking. Of the 16,069 wives, 58.9% had husbands who did not drink alcohol, and 30.0% and 11.1% had husbands who usually drank alcohol 1–2 and  $\geq 3$  times per week, respectively. The proportion married  $\geq 3$  years was a little higher among wives with husbands who drank  $\geq 3$  times per week than among wives with husbands who drank less frequently. Wives whose husbands drank were younger, were less educated, were less frequently employed, and had lower family income. In addition, more were multiparous, more took care of their children the whole day by themselves, a smaller proportion breast-fed, and a smaller proportion had visited an outpatient clinic during the past 4 weeks. Furthermore, their husbands were older and less educated, and a higher proportion of these husbands smoked cigarettes and chewed betel nuts.

Table 2 presents the crude and adjusted SF-36 scores of study subjects grouped on the basis of their perceptions of husband's alcohol drinking. After controlling for the potential confounders, wives' scores on all SF-36 scales other than the PF scale were inversely associated with the frequency of their husbands' alcohol drinking. Moreover, the MCS measure was also inversely associated with the frequency of their husbands' alcohol drinking but the PCS did not show an association.

#### Discussion

We found that frequency of alcohol drinking by husbands was inversely associated with scores by their postpartum wives on all SF-36 scales except the PF scale. Moreover, the MCS measure was also inversely associated with the frequency of their husbands' alcohol drinking.

The habit of alcohol drinking is widespread among men in Taiwan, although we do not know the amount of alcohol consumed or whether the habit is also an alcohol problem. The prevalence rate of alcohol use in our study population before exclusion (46.1%) was lower than that in the general population as determined from data of the 2002 Taiwan

**Table 1** Characteristics of study subjects by their perceptions of husband's alcohol drinking

Characteristics	Women's perceptions of their husband's alcohol drinking (times/week)			P value
	0	1–2	≥3	
Total	9466	4826	1777	
Duration of married life (%)				0.009
<3 years	55.8	57.8	54.0	
≥3 years	44.2	42.2	46.0	
<i>Wives</i>				
Age (%)				<0.001
<25 years	16.6	20.6	27.9	
25–29 years	36.8	38.2	33.7	
30–34 years	34.1	29.6	27.0	
≥35 years	12.6	11.6	11.5	
Educational level (%)				<0.001
Junior high school or below	11.0	14.8	26.2	
Senior high school	35.3	40.0	47.3	
University or above	53.7	45.2	26.6	
Employment status				<0.001
Yes	61.3	57.4	45.1	
No	38.7	42.6	54.9	
Family income per month (%)				<0.001
<50,000 NT\$	38.6	41.0	54.8	
50,000–69,999 NT\$	25.8	27.6	24.8	
70,000–99,999 NT\$	23.4	21.3	12.9	
≥100,000 NT\$	12.3	10.0	7.5	
Parity (%)				<0.001
0	51.7	50.2	43.7	
1	39.4	38.8	41.6	
≥2	8.9	10.9	14.7	
Breastfeeding (%)				<0.001
Ever	84.3	82.9	78.0	
Never	15.7	17.1	22.0	
Outpatient clinic visits during the past 4 weeks (%)				0.013
Yes	31.6	32.2	28.5	
No	68.4	67.8	71.5	
<i>Husbands</i>				
Age (%)				<0.001
<25 years	3.9	5.0	3.6	
25–29 years	23.6	24.0	22.2	
30–34 years	39.2	37.3	35.3	
≥35 years	33.4	33.7	38.9	
Educational level (%)				<0.001
Junior high school or below	9.4	13.5	26.7	
Senior high school	35.3	42.9	50.8	
University or above	55.3	43.6	22.6	
Employment status				0.249

**Table 1** continued

Characteristics	Women's perceptions of their husband's alcohol drinking (times/week)			P value
	0	1–2	≥3	
Yes	96.9	97.4	96.8	
No	3.1	2.6	3.2	
Cigarette smoking (%)				<0.001
Yes	37.6	62.1	81.5	
No	62.4	37.9	18.5	
Betel nut chewing (%)				<0.001
Yes	3.7	8.3	28.6	
No	96.3	91.7	71.4	
<i>Infants</i>				
Sex (%)				0.872
Male	52.1	51.8	52.6	
Female	47.9	48.2	47.4	
Low birth weight or preterm (%)				0.587
Yes	10.5	9.9	10.4	
No	89.5	90.1	89.6	
Major nursery by the mother (%)				<0.001
No	18.5	17.2	13.6	
Daytime	1.1	1.1	1.4	
Evening or night	35.8	33.5	21.8	
Whole day	44.6	48.1	63.2	

National Health Interview Survey (53.1%) while the rates of alcohol drinking with three or more times per week between the two surveys were similar (13.2% vs. 13.6%) [25]. The lower rate of alcohol use may be attributable to the fact that more than half of our subjects were newlyweds (married less than 3 years). Alternatively, wives may report underestimates of alcohol drinking by their husbands.

The frequency of alcohol drinking by husbands was inversely associated with scores of wives on all SF-36 scales except the PF scale (Table 2). The possibility that husbands' alcohol problems affect wives' depressive symptoms [1] and lifetime male at-risk drinking is a risk factor for the wives' psychological distress [2] has been reported. Moreover, husbands' alcohol problems affected diverse aspects of women's health including mood, anxiety, stress, general health, and quality of life as well as caused domestic violence [3]. Thus, we speculate that the worry about their husbands' drinking may be the cause of the low HRQOL of these wives.

These effects may also be partly mediated through alcohol-related intimate partner violence [4–7] or indirectly result from the negative effect of marital development. Taiwan has a traditional Chinese culture, and domestic violence is thought to be a domestic matter. Although it is

**Table 2** Crude and adjusted SF-36 scores of study subjects by their perceptions of husband's alcohol drinking

SF-36 scales	Women's perceptions of their husband's alcohol drinking (times/week)			P value
	0	1–2	≥3	
Crude	Mean ± SDs			
PF	97.7 ± 6.1	97.8 ± 6.1	97.6 ± 6.0	0.475
RP	92.5 ± 21.9 <sup>a</sup>	92.3 ± 22.0 <sup>b</sup>	90.9 ± 23.9 <sup>a,b</sup>	0.015
BP	87.9 ± 15.9 <sup>a,b</sup>	87.1 ± 16.3 <sup>a</sup>	86.9 ± 16.4 <sup>b</sup>	0.003
GH	78.4 ± 16.9 <sup>a,b</sup>	77.3 ± 17.2 <sup>a</sup>	76.9 ± 17.8 <sup>b</sup>	<0.001
VT	63.6 ± 17.3 <sup>a,b</sup>	62.6 ± 17.1 <sup>a</sup>	61.9 ± 17.5 <sup>b</sup>	<0.001
SF	89.5 ± 14.3	89.2 ± 14.6	89.9 ± 14.5	0.128
RE	84.2 ± 31.3 <sup>a</sup>	83.4 ± 31.9 <sup>b</sup>	81.4 ± 33.8 <sup>a,b</sup>	0.003
MH	71.7 ± 15.5 <sup>a,b</sup>	71.1 ± 15.5 <sup>a,c</sup>	69.5 ± 16.5 <sup>b,c</sup>	<0.001
PCS	53.8 ± 5.3	53.6 ± 5.4	53.6 ± 5.5	0.158
MCS	48.7 ± 9.0 <sup>a,b</sup>	48.3 ± 9.1 <sup>a,c</sup>	47.6 ± 9.6 <sup>b,c</sup>	<0.001
Adjusted <sup>d</sup>	Mean ± SEs			
PF	97.8 ± 0.1	97.8 ± 0.1	97.5 ± 0.2	0.214
RP	92.5 ± 0.2 <sup>a</sup>	92.2 ± 0.3 <sup>b</sup>	90.9 ± 0.6 <sup>a,b</sup>	0.031
BP	88.0 ± 0.2 <sup>a,b</sup>	87.1 ± 0.2 <sup>a</sup>	86.5 ± 0.4 <sup>b</sup>	<0.001
GH	78.4 ± 0.2 <sup>a,b</sup>	77.3 ± 0.3 <sup>a</sup>	76.8 ± 0.4 <sup>b</sup>	<0.001
VT	63.8 ± 0.2 <sup>a,b</sup>	62.4 ± 0.3 <sup>a,c</sup>	61.3 ± 0.4 <sup>a,c</sup>	<0.001
SF	89.7 ± 0.2 <sup>a,b</sup>	89.1 ± 0.2 <sup>a,c</sup>	88.2 ± 0.4 <sup>b,c</sup>	<0.001
RE	84.3 ± 0.3 <sup>a</sup>	83.4 ± 0.5 <sup>b</sup>	80.9 ± 0.8 <sup>a,b</sup>	<0.001
MH	71.7 ± 0.2 <sup>a,b</sup>	71.1 ± 0.2 <sup>a,c</sup>	69.5 ± 0.4 <sup>b,c</sup>	<0.001
PCS	53.8 ± 0.1	53.6 ± 0.1	53.6 ± 0.1	0.058
MCS	48.8 ± 0.1 <sup>a,b</sup>	48.3 ± 0.1 <sup>a,c</sup>	47.3 ± 0.2 <sup>b,c</sup>	<0.001

<sup>a,b,c</sup> Scores differ significantly from each other in that row according to a least significant difference (LSD) multiple comparisons test

<sup>d</sup> Values were adjusted for duration of married life, mother's age, education, employment status, family income per month, parity, breastfeeding, outpatient clinic visits during the past 4 weeks, husband's cigarette smoking and betel nut chewing, infant low birth weight or and preterm, major nursery by the mother

hard to put a number on the domestic violence problem [30], one study of Taiwanese aboriginals showed that women who were more likely to have been physically abused during their pregnancy had husbands who drank [31]. Another Hong Kong study also reported that the problem of intimate partner abuse in Chinese women during pregnancy is similar to that in most western countries, and the negative effect of such abuse on the HRQOL over time seems to be cumulative [32]. On the other hand, these effects could indirectly result from the negative effect of marital development. Couples' discordant drinking patterns were related to decrease in marital satisfaction and functioning over time, possibly leading to marital dissolution [8].

The MCS measure was also inversely associated with the frequency of their husbands' alcohol drinking but the PCS did not show any association. This may imply that the impact of husbands' alcohol drinking on their wives' mental health was greater than their physical health. Previous studies demonstrated that lower social support, childcare stress, and life stress are associated with worse women's mental health [20, 33]. Thus, husband's alcohol drinking could be considered as a life stress event on their wives' mental health.

These effects may be confounded by family's social disadvantage or other health risks such as smoking and

betel nut chewing of the husband. In one study, greater exposure to social disadvantage along with the problem drinking partially explained psychological distress [34]. In our study, education below university level in both husbands and wives and family income per month <50,000 NT\$ correlated with increase in the frequency of alcohol drinking (Table 1). Moreover, increase in the frequency of cigarette smoking and betel nut chewing in husbands also increased the frequency of their alcohol drinking (Table 1). This result is consistent with previous findings that show the use of alcohol, tobacco, and betel nuts tend to be clustered in Taiwan [35, 36]. However, the effects remained after controlling for the above potential confounding variables.

Although we entered other major potential confounders into our model including duration of married life, mother's age, education, family income per month, employment status, parity, breastfeeding, outpatient clinic visits during the past 4 weeks, infant low birth weight or preterm delivery, and major nursery by the mother [37], we did not explore all the dimensions potentially related to women's HRQOL such as women's social network and self-esteem, the quality of women's love and care for the baby, and even the quality of women's relation to her partner and the quality of her sexual life. Taiwan has a traditional Chinese culture, making it difficult to measure sensitive issues such

as sexual behavior. Although we attempted to collect this information from a large cohort, we are concerned that its quality may be poor.

Restriction to married women and their infants without any major diseases may limit the generalizability of our results. Women with complications during pregnancy and childbirth tended to have lower scores on most SF-36 scales, especially physical health scales, 6 months postpartum [19]. Women with postpartum depression have also been reported to have lower scores on all SF-36 scales [20]. Furthermore, a Swedish study demonstrated that parents (particularly mothers) of children with Down syndrome had lower scores on most SF-36 scales, especially mental health scales [21]. However, similar results were obtained even when only incomplete questionnaires and unmarried women were excluded (data not shown).

Our study has potential limitations. Since the study was cross-sectional in design, we cannot make any causal inference about the relationship between husband's drinking behavior and wife's HRQOL. Second, we did not use a self-report screening questionnaire for alcohol problems such as CAGE and AUDIT [38]. Husband's drinking behavior was solely based on the wife's self-report rather than his actual behavior. This could be a gross under or over representation of real drinking behavior. Third, we did not collect the information on intimate partner violence, marital quality, and family development. Examining this information may elucidate the relationship between husband's drinking behavior and wife's HRQOL. As a result of the above limitations, there could be an underestimate of the real effect.

In summary, our study adds evidence supporting the negative association between husbands' alcohol drinking and their wives' health as measured by the SF-36 HRQOL, especially for mental health. However, the differences between the groups were very small and may not be important. Further longitudinal follow-up is needed to better understand this complex relationship.

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