



# How Health Behaviour Affects Depression Across Different Age & Gender Cohorts in India?

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# Introduction

- Depression is a common mental health problem across all ages.
- Depression can be chronic and recurrent, and may cause significant dysfunction in daily life activities, morbidity, and even mortality.
- Major depression may also pose serious economic burden on society through direct and indirect costs.
- However, depression often remains undiagnosed or untreated.

# Mental Health in India

- It is estimated that nearly 5 percent of the India's total population is suffering from mental health disorders with women being more vulnerable than men.
- Health projection suggests that mental disorder will increase to 15 percent of Disability Adjusted Life Years (DALYs) by 2020 (Murray and Lopez 1996).
- China and India contribute nearly a third of the global DALYs (66 million DALYs) attributable to mental, neurological, and substance use disorders, a number greater than all developed countries combined (50 million DALYs). The burden of mental health problem is estimated to increase by 23% in India between 2013 and 2025 (Charlson et al., May 2016).

# Determinants of Mental Health

- Several socio-economic, demographic, psychological and biological factors can affect mental health at any point in time.
- Stress related to life or job and age are common factors that may lead to mental illnesses.
- There is a connection between health behaviour and depression. Recent research has shown that good nutrition is important for healthy mental health, including depression.
- Health behaviours may affect the onset and severity of depression both positively through preventive health behaviour (such as, fruit and vegetable intake and physical activity) and negatively through risk behaviour (such as, smoking and alcohol consumption).
- Several health-promoting behaviours (e.g., physical exercise, nutrition) and health risk behaviours (e.g., smoking, alcohol) are generally adopted in adolescence, which persists into adulthood.

# Past Studies

- Patel, Gwanzura, Simunyu, Lloyd, and Mann (1995) & Patel, Pereira, and Mann (1998): One of the primary factors associated with depression relates to poverty.
- Araya, Lewis, Rojas and Fritsch (2003): lack of education may cause depression.
- Simon (2002): Unemployment can lead to depression and anxiety.
- Lamb, Lee, & DeMaris (2003), LaPierre, (2009) & Reneflot and Mamelund (2012): Marriage is another important factor that can attribute towards mental health issues.
- Geerlings, Beekman, Deeg and Van Tilburg (2000): Poor physical health can also lead to mental depression, particularly among older adults.

## Past Studies (continued)

- Park and Romer (2007): found a strong association between smoking and depression.
- Waller et al., (2006): examined the relationship between alcoholism and depression among college students in US. They found students who reported drinking alcohol were almost three times more likely to report depressive symptoms.
- Bonnet, Irving and Terra (2005), Bots, Tijhuis and Giampaoli (2007), Brown, Ford and Burton (2005) and Gapler, Trivedi and Barlow (2006): found strong association between life style, including dietary habits and physical activity, with depression.



# Research Objective

- This paper empirically examines the effect of health behaviour on the prevalence and severity of depression across different age and gender cohorts.

# Empirical Model & Hypotheses

$$Y_{ij}^* = \alpha_{i0} + \beta_{i1} PREVENTIVEBEH_i + \beta_{i2} RISKBEH_i + \beta_{ik} X_{ik} + \epsilon_i$$

$$Y_j = DEP \ \& \ DEP\_SEVERE$$

*where  $Y_i = 1$  if  $Y_i^* > 0$  and 0 otherwise*

**Hypothesis 1:** Preventive behaviour is expected to reduce the odds of depression prevalence or severity, holding other things constant.

**Hypothesis 2:** Risk behaviour may have both positive and negative effects on depression prevalence and severity.



# Data

- Nationally representative sample of individuals aged 18 years and above from the World Health Organization's study on Global Ageing and Adult Health: Wave 1 (2007-2010) for India.
- The full sample of all adults (aged 18 years and above): n=10,367.
- Sub-samples by gender: n=6,258 (female) & n=4,109 (male).
- Sub-samples by age: n=1,753 (age 18-30 years), n=2,180 (age 31-45 years), n=3,608 (age 46-60 years) & n=2,826 (age 61+ years).
- **Other Variables:** Gender, Age, Marital Status, Years of Education, Employment, Income Status, Physical Health Indicators, Quality of Life, Region of Residence.

# Descriptive Statistics

## **Depression**

- Ever diagnosed with depression: 4%.
- Depression as a severe problem: 6%.

## **Preventive Health Behaviour**

- Fruit/Vegetable servings: 1-2 servings (on average).
- Vigorous work/fitness/recreational activities: 51%.
- Moderate work/fitness/recreational activities: 74%.

## **Risk Behaviour**

- Ever used tobacco: 44.4%.
- Ever used alcohol: 17%.

## **Other Factors**

- Urban: 26%.
- Female: 49%.
- Average Age: 41 years.

# Main Findings: Full sample

## □ **Model 1: Preventive Health Behaviour Only**

- Odds of depression ↓ by 26% (significant at 1%).
- No significant effect on severe depression.

## □ **Model 2: Risk Behaviour Only**

- No significant effect on prevalence and severity of depression.

## □ **Model 3: Both Preventive & Risk Behaviours + Interaction Term**

- Odds of depression prevalence ↓ by preventive behaviour.
- No significant effect of preventive or risk behaviour on severe depression.
- Interaction Term: Odds of depression prevalence ↑ by 1.18 times.

# Main Findings: Gender Cohorts

## ❑ Preventive health behaviour

- Odds of depression ↓ by 31% (significant at 1%) for males.
- Odds of severe depression ↑ by 1.17 (significant at 5%) times for females.

## ❑ Risk Behaviour

- Odds of depression ↓ by 23% (significant at 1%) for females.

# Main Findings: Age Cohorts

## ❑ Preventive health behaviour

- Odds of depression ↓ by 40% in individuals' aged 18-30 years
- Odds of depression ↓ by 26% in individuals' aged 31-45 years.
- Odds of depression ↓ by 26% in individuals' aged 46-60 years.
- Odds of depression ↓ by 24% in individuals' aged 61+ years.
- Odds of severe depression ↑ by 1.69 times (significant at 10%) in individuals' aged 18-30 years.

## ❑ Risk Behaviour

- Odds of severe depression ↓ by 20% (significant at 1%) in individuals' aged 61+ years.
- Odds of severe depression ↓ by 28% (significant at 1%) in individuals' aged 46-60 years.

# Conclusion

- Preventive health behaviour reduced both prevalence and severity of depression among individuals.
- Risk behaviour alone had no significant effect on depression prevalence or severity, but the interaction term increased the odds of depression prevalence among individuals.
- Preventive health behaviour decreased the odds of depression prevalence among individuals aged 18 to 30 years, 31 to 45 years, and 46 to 60 years, and odds of depression severity among individuals aged 61 years and older. However, it increased the odds of depression severity among individuals aged 18 to 30 years.
- Interestingly, risk behaviour reduced the odds of depression prevalence among females and among individuals aged 61 years and older. It also decreased the odds of depression severity among individuals aged 46 to 60 years.