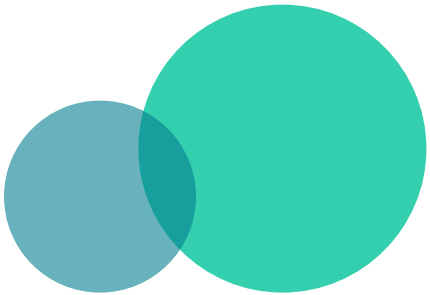
Patterns and Determinants of Cervical Cancer Risk Factors Among Nepalese Women

Sajani Manandhar
New ERA



12th National Summit of Health and Population Scientists in Nepal

Background

14.2 per 100,000

Age-standardized incidence rate in Nepal

4x higher

than WHO elimination threshold (<4/100,000)

- Cervical cancer is the 2nd most common cancer among women in Nepal
- HPV vaccination and screening remain limited in reach
- Modifiable risk factors may contribute to observed trends beyond clinical prevention

Objectives

A. To evaluate 20-year trends in six modifiable cervical cancer risk factors (NDHS 2001–2022)
B. To examine determinants of cervical cancer risk factors
C. To determine how ethnicity, wealth, and education interact to shape women's vulnerability

Methodology

Study Design

Secondary analysis of Nepal DHS
2001, 2006, 2011, 2016, 2022 - study patterns & NDHS 2022 - study determinants & interaction

Population: Women aged 15–49 years

Six Risk Factors Studied

1. Early sexual debut
2. Early first birth
3. High parity
4. Tobacco smoking
5. Hormonal contraceptive use
6. Overweight/obesity

Methodology

Analysis Approach

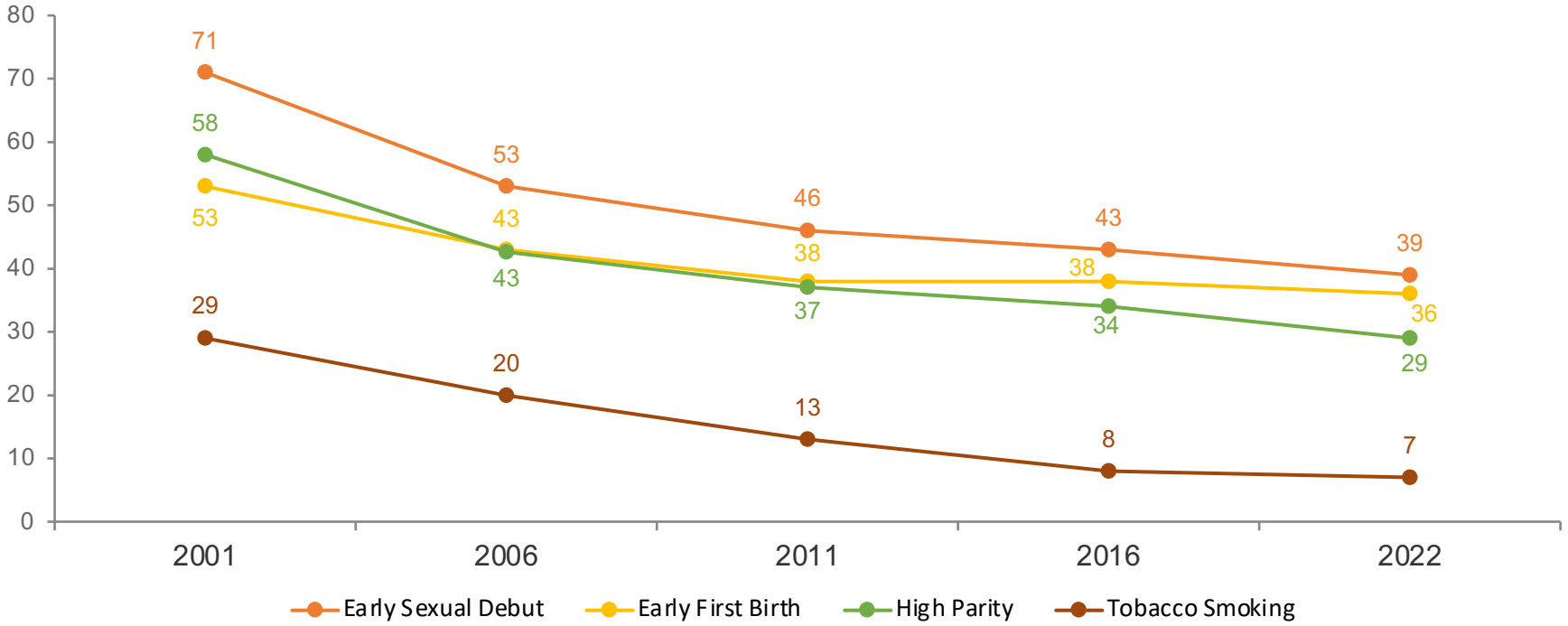
Aim A: Pooled five DHS rounds; chi-square tests for trend significance

Aim B: 2022 DHS; binary logistic regression with interaction terms (wealth × ethnicity × education)

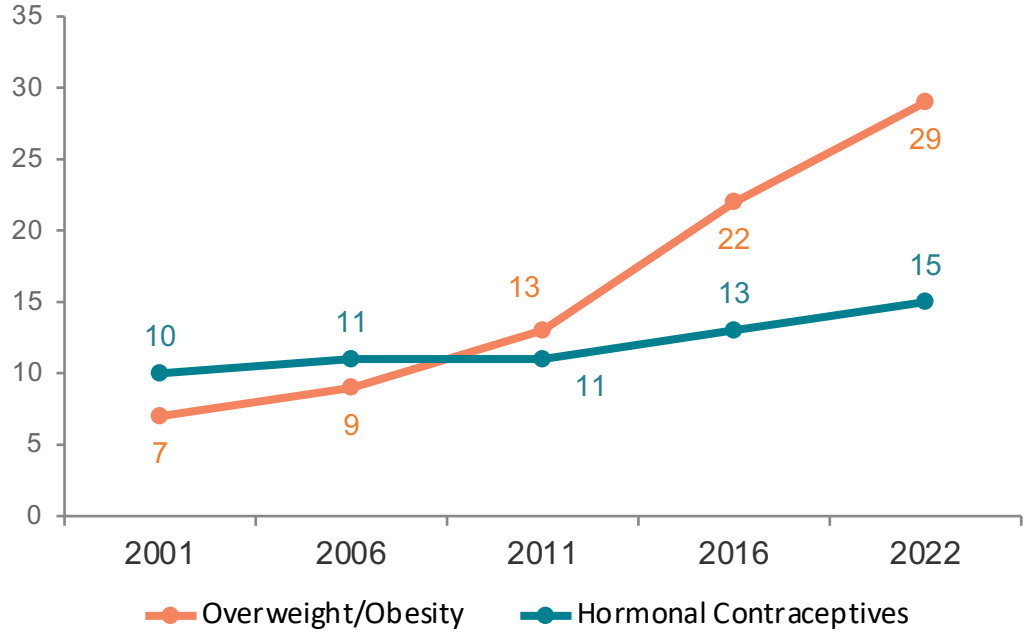
- Composite risk score: Sum of 6 risk factors → dichotomized to ≥3 risk factors
- Complex survey design accounted for (weights, PSU, strata) using R.

Results: Trends in Risk Factors (2001–2022)

Declining Risk Factors



Results: Emerging Risk Factors (2001–2022)



Key Findings

Overweight/obesity increased from 7% to 29% (4-fold rise)

Hormonal contraceptive use rose slightly: 10% to 15%

Simultaneous decline in behavioral risks and rise in metabolic risk

28% of women aged 15-49 had at three risk factor in 2022

Results: Determinants of Exposure

Age 40–49 vs 15–24

AOR 4.62

95% CI: 3.65-5.84

Higher Education vs No Education

AOR 0.03

95% CI: 0.02-0.07

Adjusted Determinants (Nepal DHS 2022, n=7,348)

Variable	AOR	95% CI	Significance
Age 25–39 (vs 15–24)	**4.21**	3.47–5.10	***
Age 40–49 (vs 15–24)	**4.62**	3.65–5.84	***
Basic Education (vs No Education)	**0.66**	0.56–0.77	***
Secondary Education (vs No Education)	**0.16**	0.13-0.20	***
Higher Education (vs No Education)	**0.03**	0.02–0.07	***

*** p<0.001, ** p<0.01, * p<0.05

Results: Determinants of Exposure

Muslim vs Brahmin/Chhetri

AOR 1.84

95% CI: 1.26-2.68

Richer vs Poorest

AOR 1.02

95% CI: 0.8-1.3

Adjusted Determinants (Nepal DHS 2022, n=7,348)

Variable	AOR	95% CI	Significance
Madhesi (vs Brahmin/Chhetri)	**1.43**	1.06-1.94	*
Dalit (vs Brahmin/Chhetri)	**1.51**	1.21–1.90	***
Muslim (vs Brahmin/Chhetri)	**1.84**	1.26–2.68	**
Middle (vs Poorest)	**0.81**	0.66-0.99	*
Richer (vs Poorest)	**1.02**	0.8-1.3	-

*** p<0.001, ** p<0.01, * p<0.05

Results: Intersectional Analysis

Interaction: Wealth Quintile × Ethnicity × Education

Wealth	Ethnicity	Secondary+	≤Basic
Higher	Advantaged	Ref.	7.07*** [4.12-12.11]
	Disadvantaged	1.44 [0.86 – 2.42]	7.14*** [4.44 – 11.46]
Lower	Advantaged	1.52 [0.81 – 2.86]	5.67*** [3.31 – 9.72]
	Disadvantaged	1.54 [0.79 – 3.02]	7.87*** [4.89 – 12.65]

Reference: Higher wealth, advantaged ethnicity, secondary or higher education

Key Insight

Lower wealth, disadvantaged ethnicity, and basic/lower education group had the **highest odds (AOR=7.87)**

Education was consistently the strongest modifier across all wealth and ethnic groups

Conclusion: Takeaway Messages

1 Declining behavioral risks

Early sexual debut, early childbirth, high parity, and tobacco smoking have significantly declined over two decades.

2 Rising metabolic risks

Overweight/obesity quadrupled (7% to 29%), creating new challenges for cervical cancer prevention.

3 Education is protective

Higher education was the strongest protective factor (AOR=0.03). Investing in girls' education is critical.

4 Intersectional vulnerability

Women from lower wealth, disadvantaged ethnicity, with basic/lower education face the highest risk.

Conclusion: Takeaway Messages

Policy Implication:

While investment in screening and vaccinations remains critical, addressing modifiable risk factors is equally important. Interventions should prioritize women from the most vulnerable social structures.

References

1. Ferlay J, et al. (2024). Global Cancer Observatory: Cancer Today. IARC.
2. Zhang X, et al. (2021). Trends of cervical cancer at global, regional, and national level. BMC Public Health.
3. Singh D, et al. (2023). Global estimates of incidence and mortality of cervical cancer in 2020. Lancet Global Health.
4. Shrestha G, et al. (2021). Cancer burden in Nepal, 1990–2017. PLoS One.
5. Gultekin M, et al. (2020). WHO elimination threshold for cervical cancer.
6. MOHP, New ERA, & ICF. (2023). Nepal Demographic and Health Survey 2022.
7. Abila DB, et al. (2021). Burden of Risk Factors for Cervical Cancer in East Africa. JCO Glob Oncol.
8. Khatri R, et al. (2024). Equity Analysis of Maternal Health Services in Nepal.
9. Ginsburg O, et al. (2023). Women, power, and cancer: a Lancet Commission.
10. Burd EM. (2003). Human papillomavirus and cervical cancer. Clin Microbiol Rev.

Thank You

Sajani Manandhar

She works as a Research Officer and describes herself as someone who is endlessly curious. She finds meaning in asking questions, digging for answers, making sense of the world one finding at at time.