ASSOCIATION BETWEEN OBESITY AND LOW BACK PAIN IN ADULTS: A PROSPECTIVE COHORT STUDY

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INTRODUCTION

Low back pain (LBP), is a common issue that affects the human body. It cannot be detected physically but can only be described by the person experiencing it (1). There is an estimated 619 million people living with LBP (2). Diagnosing the cause of low back pain is challenging and often debated, as many different factors can influence it (3).

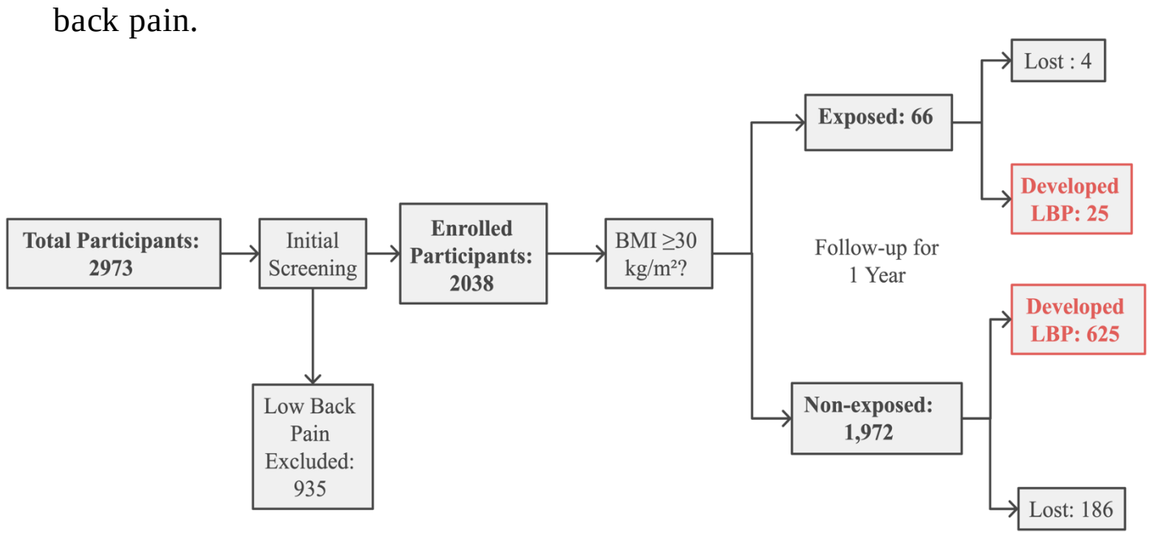
Among lifestyle risk factors, **smoking** and **excess body mass** raise the risk of LBP and health care consultation (4).

Understanding the relationship between higher Body Mass Index (BMI) and the increase of LBP prevalence is crucial.

RESEARCH QUESTION: Are adults with body mass index equal and greater than 30kg/m2 more at risk of developing low back pain?

METHODS

- A prospective cohort study of 2,038 adults (aged 25-75) attending NHS Lothian was conducted. 10 out of 20 general practices were randomly selected using a cluster sampling approach, and patients provided consent to participate.
- Participants with low back pain at baseline (n=935) were excluded after initial screening with a questionnaire. BMI was calculated from measured weight and height using standardized scales, and participants were categorized into two groups: BMI ≥30 kg/m² (n=66) and BMI <30 kg/m² (n=1,972). They were then followed for one year to track new cases of low back pain.



RESULTS

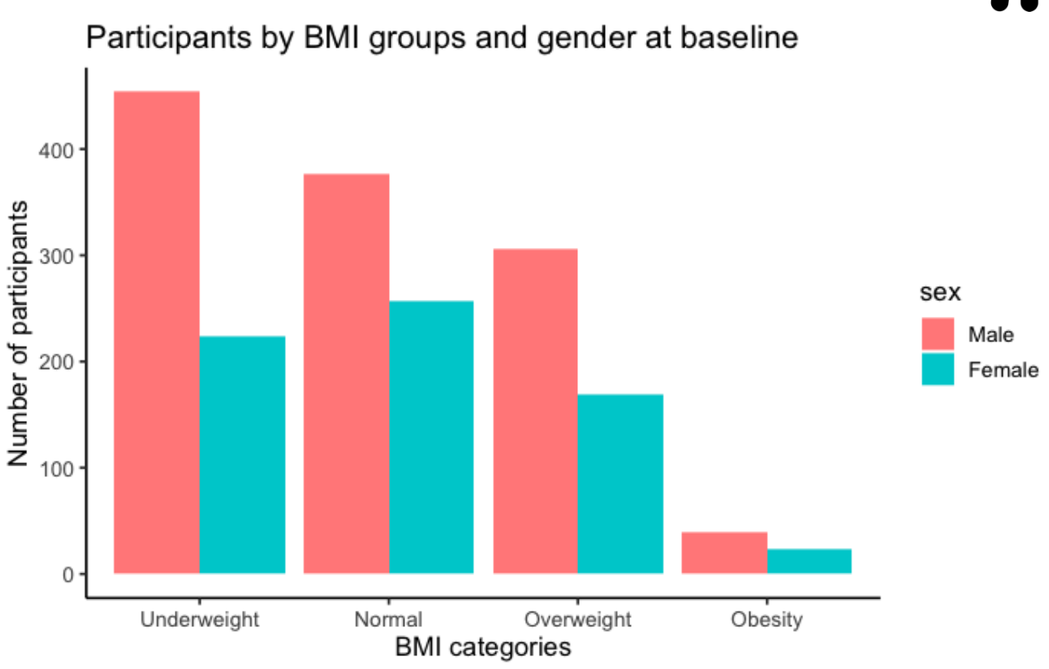


Figure 1 Participants by BMI categories and sex

Characteristics		Exposed (BMI ≥30 kg/m2)	Non-exposed (BMI <30 kg/m2)
Number of participants		66	1972
Mean age in years (SD)		49.56(12.92)	47.33(12.5)
Sex, N(%)	**Male**	41(62.12)	1247(63.24)
	Female	25(37.88)	725(36.76)
Low Back Pain, N(%)		25(37.88)	625(31.69)
	Male, N(%)	13(52)	378(60.48)
	Female, N(%)	12(48)	247(39.52)

Table 1. Exposed & Non-exposed with the outcome of low back pain.

Age groups	Number of participants	Number of cases LBP	Incidence proportion
25-35	434	47	10.83
36-45	489	150	30.67
46-55	506	162	32.02
56-65	461	143	31.02
66-75	148	148	100

Table 2. Incidence proportion of LBP according to age groups.

	Low back pain	Without LBP	Total
Obesity	25 (a)	37 (b)	62 (a + b)
Without Obesity	625 (c)	1161 (d)	1786 (c + d)

Table 3. Risk ratio computation.

- Risk of LBP in exposed group = a/(a + b) = 25/62 = 0.4032258
- Risk of LBP in non-exposed group = c/(c + d) = 625/1161 = 0.349944
- **RR** = a/(a + b) / c/(c + d) = 0.4032258/ 0.349944 = **1.15**
- **PAR** = **0.48%**

Individuals with BMI ≥30 had 1.15 times greater risk of LBP compared to those with BMI <30. And 0.48% of LBP cases is attributable to BMI ≥30.

DISCUSSION

- This study identified a link between high BMI and an increased risk of LBP, with men at higher risk, contrasting with a meta-analysis which reported a greater predisposition in women (5).
- This may reflect differences in sample demographics and lifestyle factors which warrant further investigation.

Limitations

- Lack of data on socioeconomic status and lifestyle factors;
- Attrition bias from loss to follow-up;
- Potential selection bias due to varied data sources;
- Missing cumulative person-time, limiting incidence rate analysis.

CONCLUSION

This study demonstrates a clear association between high BMI and an elevated risk of developing LBP, particularly among men, challenging previous findings that suggest a greater predisposition in women. These results highlight the importance of considering obesity as a modifiable risk factor in low back pain prevention strategies. Future studies should aim to clarify gender-specific risk profiles, integrate socioeconomic and lifestyle data and use extended follow-up for clearer long-term impact.

BOAZ	Data analysis, poster design
EUGENIA	Research generation, poster design
FALINYI	Poster design/editing, proof reading
HERITAGE	Proof reading, poster design/editing
ROZEMUNN	Research generation, poster design
SUSHMITA	Data analysis, poster design

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