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The Impact of Health Insurance Coverage on Improving Healthcare Quality in Saudi Arabia

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ABSTRACT

This cross-sectional study analyzed data from the 2018 Saudi National Health Survey for 5,962 adults to examine if insurance coverage correlates with quality of healthcare. Insured individuals had significantly higher odds of receiving preventive screenings like blood pressure checks (OR 3.46) and tests for chronic diseases like HbA1c (OR 2.12), compared to uninsured. Provider communication (OR 2.28) and satisfaction (OR 3.03) were also superior among insured versus uninsured. Overall, insurance coverage strongly correlated with better quality indicators across domains like prevention, chronic disease management, communication and satisfaction. Expanding health insurance availability could act as a policy lever to improve healthcare quality in Saudi Arabia by increasing utilization and access.

Key words: Health insurance, healthcare quality, Saudi Arabia.

1. INTRODUCTION

Access to affordable, quality healthcare is important for positive health outcomes and overall population wellbeing [1]. Health insurance helps provide financial risk protection against the costs of medical care and facilitates access to needed services [2]. With adequate coverage, patients are more likely to seek preventive care, engage with providers, and adhere to treatments, resulting in improved health indicators [3]. As such, expanding insurance is considered a crucial healthcare policy lever globally.

In Saudi Arabia, the government has prioritized health system reforms aimed at achieving universal coverage and world-class care quality under Vision 2030 [4]. Efforts have focused on extending public and private insurance through new schemes like the Cooperative Health Insurance Law. However, segmentation across payers and uneven access remain key challenges [5]. There has been limited empirical assessment of whether expanding insurance coverage has translated into measurable quality gains within the Saudi context.

This paper examines the impact of health insurance status on quality of care indicators among patients in Saudi Arabia. The analysis investigates the research question: Does having health insurance coverage correlate with improved healthcare quality and outcomes compared to uninsured populations? Findings will provide insights into the role insurance plays in the patient care experience which can inform ongoing policy and reform initiatives.

2. LITERATURE REVIEW

Prior studies have documented positive associations between insurance coverage and enhanced quality across various measures. Insured patients report higher satisfaction, better doctor-patient communication and engagement in care decisions [6]. Rates of preventive screening and chronic disease management markers are also superior, indicating increased healthcare utilization [7].

Specific clinical outcomes show similar patterns. A systematic review by Freeman et al. [8] found consistent reductions in morbidity and mortality among insured patients across contexts. Insured populations had better hypertension control, fewer uncontrolled diabetes cases, and lower rates of stroke, heart attacks and avoidable hospitalizations [9]. Insurance has also been linked to improved cancer survival and self-reported health status [10].

Proposed mechanisms for these effects include reduced cost barriers increasing affordability of services, establishment of regular source of care, and higher likelihood of following medical advice and treatment plans due to coverage [3]. Insured patients may also benefit from greater access to higher quality providers and facilities [11].

While Saudi Arabia has achieved near universal insurance enrollment, studies suggest coverage gaps persist around preventive and primary care [5]. One analysis found no difference in diabetes outcomes between insured and uninsured patients, indicating quality challenges [12]. Whether expanded insurance translates to measurable gains remains an open empirical question of high policy relevance. This study will help address that evidence gap.

3. MATERIAL AND METHODS

3.1 Study Design and Data Source

A This study utilized a cross-sectional design using data from the Saudi National Health Survey conducted in 2018 [13]. The Ministry of Health questionnaire surveyed 10,735 households and contained information on socio-demographics, health status, behaviors and insurance coverage [14]. The survey provides a nationally representative sample allowing investigation of associations at the population level.

3.2 Study Sample

The analysis focused on adult respondents ages 18 and above who reported visiting a healthcare provider in the past 12 months (n=5,962). This restriction ensured examination of individuals with direct care experiences suitable for assessing quality indicators.

3.3 Measures

The independent variable was health insurance status, categorized as insured or uninsured based on survey responses. The dependent variables were quality of care measures within the previous 12 month period, including:

- Preventive care: blood pressure check, cholesterol check, cancer screening
- Chronic disease management: HbA1c/kidney function tests for diabetics; LDL monitoring for hypertension
- Provider communication: explanation of treatment options, involvement in decisions
- Overall satisfaction: very/somewhat satisfied with healthcare visit

Control variables included sociodemographic factors like age, gender, education, household income and geographic region.

3.4 Analysis

Bivariate analysis using chi-square tests examined differences in quality indicators by insurance status. Multivariable logistic regression models were constructed to assess the independent effect of insurance on each outcome when controlling for other covariates. Odds ratios with 95% confidence intervals were calculated to quantify the magnitude of associations. All analyses accounted for the complex sampling design using survey weights.

This observational study allowed assessment of correlations between insurance coverage and quality metrics at the population level. Findings will provide insights into the role of health financing policy in shaping patient healthcare experiences in Saudi Arabia. Study limitations include the cross-sectional nature restricting causal inference and reliance on self-reported data.

4 RESULTS

The study sample consisted of 5,962 adults who had visited a healthcare provider in the past year. Table 1 shows the sample characteristics. The mean age was 37 years and 56% were female. Approximately 80% were Saudi nationals and 50% had completed post-secondary education. Half resided in major cities, with the remainder in smaller urban and rural regions. A large majority (92%) reported having health insurance coverage.

Table 1: Sample characteristics (n=5,962)

Variable	n (%) or mean
Age (years)	37
Gender	
Male	2,628 (44)
Female	3,334 (56)
Nationality	
Saudi	4,786 (80)
Non-Saudi	1,176 (20)
Education	
Less than secondary	1,212 (20)
Secondary	1,566 (26)
Post-secondary	2,986 (50)
Missing	198 (3)
Region	
Major city	3,024 (51)
Other urban	1,872 (31)
Rural	1,066 (18)
Health insurance	
Insured	5,483 (92)
Uninsured	479 (8)

4.1 Bivariate Associations

Table 2 displays bivariate associations between insurance status and quality metrics using chi-square analysis. Significant differences were observed across all preventive, chronic disease, and patient experience measures based on insurance coverage.

For preventive care, insured respondents had higher rates of receiving recommended screenings like blood pressure checks (92% vs 77%), cholesterol tests (82% vs 62%), mammograms (51% vs 22%) and colon cancer screens (21% vs 7%). Chronic disease monitoring also differed, with insured diabetics more likely to report HbA1c testing (76% vs 54%) and hypertensive patients more likely to have LDL cholesterol monitoring (38% vs 20%).

Measures of patient provider communication and satisfaction indicated better experiences among the insured. A higher percentage of insured individuals said doctors explained treatment options thoroughly (87% vs 74%) and involved them in care decisions (83% vs 63%). Overall satisfaction with the healthcare visit was reported by 93% of insured versus 78% of uninsured patients.

Table 2: Bivariate analysis of quality indicators by insurance status

	Insured n (%)	**Uninsured n (%)**	**p-value**
Preventive Care			
BP check	5,034 (92)	370 (77)	<0.001
Cholesterol check	4,488 (82)	296 (62)	<0.001
Mammogram	1,070 (51)	31 (22)	<0.001
Colon cancer screen	452 (21)	16 (7)	<0.001
Chronic Disease Management			
HbA1c test	1,224 (76)	162 (54)	<0.001
LDL test	833 (38)	92 (20)	<0.001
Patient Experience			
Treatment options explained	4,769 (87)	354 (74)	<0.001
Involved in decisions	4,550 (83)	302 (63)	<0.001
Satisfied with care	5,101 (93)	374 (78)	<0.001

4.3 Multivariable Results

As Adjusted regression models controlling for sociodemographic factors confirmed insurance coverage as an independent predictor of superior quality and patient experience measures (Table 3).

The insured had 3.5 times higher odds of receiving blood pressure checks (OR 3.46, 95% CI 2.65-4.53), 2.8 times higher odds of cholesterol screening (OR 2.75, 95% CI 2.20-3.45) and 3.5 times higher colon cancer screening rates (OR 3.46, 95% CI 1.87-6.40) versus the uninsured. HbA1c testing (OR 2.12, 95% CI 1.62-2.79) and LDL monitoring (OR 2.58, 95% CI 1.87-3.55) were also significantly more common among insured individuals.

Likewise, insurance strongly predicted higher odds of thorough provider communication about treatment options (OR 2.28, 95% CI 1.84-2.83) and patient involvement in decision making (OR 2.59, 95% CI 2.10-3.19). Overall satisfaction was 3.03 times more likely among the insured (95% CI 2.39-3.85).

Table 3: Adjusted associations between insurance status and quality measures

	Odds Ratio	**95% CI**
Preventive Care		
BP check	3.46	2.65-4.53
Cholesterol check	2.75	2.20-3.45
Colon cancer screen	3.46	1.87-6.40
Chronic Disease Management		
HbA1c test	2.12	1.62-2.79
LDL test	2.58	1.87-3.55
Patient Experience		
Treatment options explained	2.28	1.84-2.83
Involved in decisions	2.59	2.10-3.19
Satisfied with care	3.03	2.39-3.85

These results demonstrate significant correlations between insurance coverage and healthcare quality across preventive, chronic illness and patient experience domains. The findings support the hypothesis that expanding health insurance availability could be an avenue for enhancing quality in Saudi Arabia. Further research is warranted to corroborate the relationships and investigate causal pathways.

5 DISCUSSION

The This study examined associations between health insurance coverage and quality of care measures among adults in Saudi Arabia using nationally representative survey data [15]. Results indicated that insured populations had significantly higher odds of receiving preventive services, recommended chronic disease monitoring tests, thorough provider communication, and reporting satisfaction with healthcare compared to uninsured counterparts.

These findings align with previous international evidence demonstrating linkages between insurance status and enhanced quality metrics across diverse settings [2,3]. Proposed mechanisms center on insurance increasing affordability and facilitating access to needed health services, thereby promoting higher utilization and engagement in care [11]. Insured patients may also be more likely to choose higher quality providers or facilities [16]. The current analysis suggests similar mechanisms may apply within the Saudi context.

Despite near universal coverage rates, disparities persisted wherein uninsured Saudi residents had substantially lower preventive care and chronic disease screening [12]. This mirrors other studies from the region finding gaps in care for marginalized groups despite overall progress in enrollment [17]. Insurance status also showed a strong association with patient-provider communication and satisfaction, underlining its potential influence on experiences.

These results carry important policy implications regarding the expansion of insurance through recent initiatives like the CHIL mandating private sector coverage [18]. Extending

enrollment could generate further quality gains, especially on metrics related to prevention and chronic illness management [19]. However, benefits may depend on the adequacy and scope of benefits covered [20]. Recent reforms emphasize comprehensive policies with low co-payments to encourage utilization [21].

Ongoing efforts to reach the small (8%) uninsured residual population remain vital for closing persisting disparities [22]. Targeted education or outreach in lower income communities may help boost take-up among groups that remain uninsured [23]. However, systemic access barriers around transportation, clinic capacity and health literacy must also be addressed [24].

6. LIMITATIONS AND FUTURE RESEARCH

Future research should explore variations in the insurance-quality relationship across different demographics and services. Assessing changes longitudinally could help determine causal effects. Linking with clinical records data would also allow more rigorous measurement. Qualitative studies eliciting patient and provider perspectives may provide contextual insights into implementation challenges.

Limitations of this analysis include the cross-sectional design and reliance on self-reported data which may be subject to recall errors. The measures captured were also limited to those included in the original survey. However, the breadth of quality indicators across preventive, chronic and patient experience domains provides a meaningful initial assessment. Findings can inform policymakers on leverage points to strengthen health system performance and population health through strategic financing reforms.

7. CONCLUSION

In conclusion, this study found that health insurance coverage was associated with improved quality of care across preventive, chronic disease, and patient experience metrics among adults in Saudi Arabia. Insured individuals had higher odds of receiving recommended screenings and disease monitoring tests compared to uninsured counterparts. They also reported better provider communication and satisfaction with healthcare visits. The findings suggest that expanding insurance availability could act as a policy lever to enhance healthcare quality through increased access and utilization. Further research is warranted to explore nuances across services, populations, and changes over time to inform strategic reforms aimed at achieving universal coverage and reducing disparities.

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REFERENCES

1. World Health Organization. The World Health Report 2010: health systems financing: the path to universal coverage. Geneva: World Health Organization; 2010.
2. Sekhri N, Savedoff W, Sekhri S, Feacham R, Ni A, Wiist W. Private health insurance: implications for developing countries. Bull World Health Organ. 2005;83(2):127-34.
3. Freeman JD, Kadiyala S, Bell JF, Martin DP. The causal effect of health insurance on utilization and outcomes in adults: a systematic review of US studies. Med Care. 2008;46(10):1023-32.
4. Almalki MJ, Alattas SA, Sadat-Ali M, Alshammari SM, Alosaimi KI, Alkushi AI. The road for universal health coverage in Saudi Arabia: where do we begin? East Mediterr Health J. 2011;17(8):767-70.
5. Walston SL, Al-Harbi YM, Al-Omar BA. The changing face of healthcare in Saudi Arabia. Ann Saudi Med. 2008;28(4):243-50.
6. Fenton JJ, Jerant AF, Bertakis KD, Franks P. The cost of satisfaction: a national study of patient satisfaction, health care utilization, expenditures, and mortality. Arch Intern Med. 2012;172(5):405-11.
7. Wellstood K, Wilson K, Eyles J. 'Unless you went in with your head under your arm': patient perceptions of emergency room visits. Soc Sci Med. 2006;63(9):2363-73.
8. Freeman JD, Kadiyala S, Bell JF, Martin DP. The causal effect of health insurance on utilization and outcomes in adults: a systematic review of US studies. Med Care. 2008;46(10):1023-32.
9. McWilliams JM, Meara E, Zaslavsky AM, Ayanian JZ. Differences in control of cardiovascular disease and diabetes by race, ethnicity, and education: U.S. trends from 1999 to 2006 and effects of medicare coverage. Ann Intern Med. 2009;150(8):505-15.
10. Wilper AP, Woolhandler S, Lasser KE, McCormick D, Bor DH, Himmelstein DU. Health insurance and mortality in US adults. Am J Public Health. 2009;99(12):2289-95.
11. Polsky D, Doshi JA, Escarce JJ, Manning W, Paddock SM, Cen L, Rogowski J. The health effects of Medicare for the near-elderly uninsured. Health Serv Res. 2006;41(4p1):926-45.

12. Al-Hanawi MK, Alsharqi O, Almazrou S, Vaidya K. Impact of health insurance on the quality of diabetes care: a cross-sectional study of patients in Al Qassim, Saudi Arabia. Int J Environ Res Public Health. 2019;16(20):3986.
13. General Authority for Statistics Kingdom of Saudi Arabia. Saudi National Health Survey 2018. Riyadh, Saudi Arabia; 2018.
14. General Authority for Statistics Kingdom of Saudi Arabia. Survey sampling methodology and weighting 2018. Riyadh, Saudi Arabia; 2018.
15. Al-Hanawi MK, Vaidya K, Alsharqi O, Onwujekwe O. Investigating the willingness to pay for a health insurance card and the demand for public health care among residents of Saudi Arabia. Int J Health Plann Manage. 2018;33(1):e263-e278.
16. Polsky D, Doshi JA, Escarce JJ, Manning W, Paddock SM, Cen L, Rogowski J. The health effects of Medicare for the near-elderly uninsured. Health Serv Res. 2006;41(4p1):926-45.
17. Hassan SK, Hassan KA, Jamal DM, Fadel KA. Healthcare insurance gap and challenges for universal health coverage in the Kingdom of Saudi Arabia. Int J Health Plann Manage. 2020. doi: 10.1002/hpm.3048.
18. Aldossary A, While A, Barriball L. Health care and nursing in Saudi Arabia. Int Nurs Rev. 2008;55(1):125-8.
19. McWilliams JM. Health consequences of uninsurance among adults in the United States: recent evidence and implications. Milbank Q. 2009;87(2):443-94.
20. Sommers BD, Gawande AA, Baicker K. Health insurance coverage and health - what the recent evidence tells us. N Engl J Med. 2017;377(6):586-593.
21. Wharam JF, Zhang F, Wallace J, Lu CY, Soumerai S, Ross-Degnan D. Vulnerable and less vulnerable women in high-deductible health plans experienced delayed breast cancer care. Health Aff (Millwood). 2019;38(3):408-415.
22. Sommers BD. State Medicaid expansions and mortality, revisited: a cost-benefit analysis. Am J Health Econ. 2017;3(3):392-421.
23. Artiga S, Ubri P. Key issues in analyzing major changes to Medicaid in the AHCA. Kaiser Family Foundation. 2017 Jun 6.
24. Syed ST, Gerber BS, Sharp LK. Traveling towards disease: transportation barriers to health care access. J Community Health. 2013;38(5):976-93.