The impact of the women's medical education ban in Afghanistan on service coverage and maternal and neonatal mortality: a modelling study

Shatha Elnakib, Timothy Roberton, Husnia Sadat, Supriya Madhavan, Hadia Samaha, Mohammad Mahdi Frough, Marion Cros, Anju Malhotra

Summary

Background Afghanistan has made remarkable progress in addressing its high maternal and neonatal mortality rates between 2001 and 2021. Recent restrictions banning midwifery and nursing education for women risk reversing these gains. Using scenario-based modelling, this study examined the potential long-term impact of the ban on service coverage and mortality.

Methods In this modelling study, we developed four scenarios reflecting slow versus fast attrition among women nurses and midwives and the possibility of male substitution and simulated projected changes in care seeking for six services accessed by women and children. Projections were from 2022 to 2035. Baseline data were collected from the 2023 Human Resources for Health Situational Assessment. We used a mathematical model that estimated care seeking as a function of health worker density and the proportion of women providers, accounting for varying levels of gender sensitivity to male substitution for each service as assessed by provincial-level Afghan health workers through a subjective expert elicitation exercise. Mortality outcomes were estimated using the Lives Saved Tool.

Findings Our model projected decline in women's workforce entry, resulting in reduced service utilisation. We projected relative reductions in women's care seeking for maternal and reproductive health to 50–55% of current levels under the best-case scenarios to as low as 33–35% of current levels under the worst-case scenarios. These reductions translate into significant increases in the maternal mortality ratio, ranging from 29% under the best scenario to 41% under the worst scenario. Child health services would also suffer, but with greater substitutability of male providers to a lesser degree, with projected declines in care seeking to 76–80% under the best-case scenario and to 56–59% under the worst-case scenario. The resulting increase in child mortality rates could range between 10% and 16% and in neonatal mortality rates between 12% and 17%.

Interpretation These findings represent scenario-based projections rather than forecasts and are highly dependent on assumptions regarding workforce attrition and substitution. Nonetheless, they show that the ban on women's medical education in Afghanistan will severely restrict women not only from providing health care but from accessing it as well. The policy threatens to reverse hard-won gains in maternal and child survival, with women's health and life chances disproportionately affected. Sustained advocacy and interventions are therefore urgently needed.

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Introduction

Globally, Afghanistan has one of the highest maternal and neonatal mortality rates, with an estimated maternal mortality ratio (MMR) of 620 deaths per 100 000 live births in 2020 and a neonatal mortality rate (NMR) of 24 per 1000 live births in 2023.[1] Although these figures reflect improvements from previous decades, they remain well above Eastern Mediterranean region averages, underscoring barriers in access to maternal, newborn, and child health services.[1]

Afghanistan's health system has long been undermined by decades of conflict, chronic underinvestment, and structural gender inequalities. During the Taliban's first regime (1996–2001), sweeping restrictions on women and girls—including bans on education and employment—debilitated the sector by preventing women from entering the health workforce and limiting women's and girls' access to services.[2] By the time the Taliban government collapsed in 2001, the Ministry of Public Health had inherited an under-resourced system, marked by substantial shortages of skilled health personnel, particularly providers who are women.[3]

In the two decades that followed, a flurry of multilateral investments contributed to measurable progress in rebuilding the health system and expanding access to care, particularly for women and girls. Key reforms included the implementation of the Basic Package of Health Services

Research in context

Evidence before this study

The ban on women's medical education in Afghanistan is unprecedented and, as a result, research on the impact of such restrictions on health-care-seeking behaviour, health service utilisation, and mortality outcomes is scant. Nonetheless, a robust body of evidence highlights the critical role midwives and nurses play in reducing maternal and newborn mortality, as well as the importance of female health professionals in facilitating care seeking for women, particularly in settings with conservative gender norms.

Added value of this study

This study provides the first evidence on the health system impacts of Afghanistan's recent ban on midwifery and nursing education by quantifying impacts on care seeking for maternal, newborn, and child health services. Although the essential role of midwives and nurses in improving maternal and newborn outcomes is well established, no studies have looked at how this ban could influence health workforce make-up; care seeking, especially for women and children; and maternal, newborn, and child mortality outcomes. This modelling study quantifies the expected decline in female workforce entry and its implications for service use and maternal mortality. Findings from the projections illustrate the severe repercussions the ban will have on maternal, newborn, and child health.

Implications of all the available evidence

The findings of this study serve as an important advocacy tool highlighting the urgent need to reverse the ban and to explore alternative training and sourcing pathways for providers who are women. This ban will have far-reaching consequences on service utilisation and mortality, especially for women, and to a lesser degree for children.

and Essential Package of Hospital Services, the expansion of community-based primary care, and large-scale training programmes to strengthen the health workforce, including training thousands of midwives, nurses, and community health workers.[4,5] By 2021, there were more than 2200 donor-financed public health facilities, spanning community-based health posts, basic and comprehensive health centres, and district, provincial, and specialised hospitals. In turn, the number of midwives grew from 467 in 2002 to 6376 in 2020.[6]

By the time the Taliban regained control in August, 2021, an estimated 87% of the Afghan population lived within a 2 h travel radius of a health service delivery point.[3] Following Taliban takeover, the transfer of the contracting-out system managed by the Ministry of Public Health to UN agencies enabled continuity of services. This was in large part made possible by the women's workforce willingness to continue working for UN-contracted non-governmental organisation service providers. However, in December, 2024, Taliban authorities banned women's participation in midwifery and nursing professions by issuing a directive requiring all public and private institutions to suspend the medical education of girls and women. This decree followed a series of prior directives aimed at limiting women's roles in education and public life. Indeed, out of the 80 edicts issued by the Taliban since August, 2021, 54 specifically targeted women, with the education sector most heavily affected.[7] In 2021, the Taliban imposed restrictions on girls' education, permitting girls to attend school only up to grade 6 in gender-segregated settings, effectively closing secondary schools to girls.[7] These restrictions had already curtailed the pipeline for training doctors who are women. In this context, midwifery and nursing had become the most viable and essential pathways for maintaining a health workforce of women capable of providing gender-sensitive care. The 2024 ban on midwifery and nursing education for women now stops even these crucial avenues, effectively barring women from entering life-saving health professions.[8,9]

The restrictions are expected to have far-reaching consequences for the health workforce supply, service delivery, and maternal and newborn health outcomes. This study asks: how will the ban on training women nurses and midwives affect the availability of essential maternal and child health services and associated health outcomes over the next decade? Although Afghanistan's health system faces multiple concurrent challenges—including economic contraction, insecurity, and funding volatility—this study isolates the effect of the women's medical education ban on health workforce availability and service coverage, holding other factors constant. By quantifying these projected impacts, this study aims to inform dialogue, advocacy, and programmatic responses by humanitarian and other actors, and to underscore the urgent need for viable strategies to protect and promote women's and children's health, and to sustain the contributions of women's health workers in Afghanistan.

Methods

Study design

In this modelling study, we used models to project the potential trajectories of health workforce availability and service coverage from 2022 to 2035 for nurses and midwives, who deliver the most primary health care services for maternal and child health in Afghanistan, and for whom female individuals are the target of the ban.

We modelled care seeking for six categories of health interventions for which service delivery depends heavily on women nurses and midwives, and the clientele are most frequently women seeking care for themselves or their children. These categories were family planning, antenatal care, childbirth services, postnatal care, vaccinations, and Integrated Management of Childhood Illness services.

The models considered varying scenarios for three key parameters: (1) replacement of nurses who are women by those who are men; (2) the rate of attrition of currently working women nurses and midwives as they exit the workforce from 2022 to 2035; and (3) the gender sensitivity by province in the acceptability of male nurses providing each of these services in the absence of women nurses and midwives.

We began by creating a baseline picture of the Afghanistan nurse and midwife workforce, using data from the 2023 Human Resources for Health Situational Assessment, which contains the number of health workers for the year 2022, by cadre, sex, and province.[10] Health worker density varied by province ranging from 0·21 to 3·87, while the proportion of workforce who are women ranged between 48% and 77% (table 1).

All data used for this modelling exercise is publicly available and therefore ethical approval was not sought.

Base case model

As a counterfactual for the analysis, we created a base case model for how the health workforce would have grown over time in the absence of the most recent women's medical education ban. We chose a neutral assumption that the workforce will grow over time in proportion to the population; in other words, that workforce density would stay constant.

Province-level population estimates were derived from the UN World Population Prospects (WPP) 2024 revision. Because the WPP provides national-level estimates only, we disaggregated to provinces using the WorldPop top-down constrained population raster for Afghanistan (2020, 100 m resolution, UN-adjusted), applying each province's share of the gridded population to the WPP 2024 national total of 40·6 million for 2022.

As the UN World Population Prospects estimated that the Afghanistan population would grow at a rate of 2% per year over the coming decade, we used this as an estimate of population growth and base case health workforce growth from 2022 to 2035. To match an overall growth of 2% per year, we assumed that the number of nurses and midwives entering is equivalent to 6% of the existing workforce. We also assumed that 4% of active nurses and midwives exit the workforce each year. While conservative—as evidence suggests that attrition can be much higher, reaching 16% in Afghanistan[11]—we chose to apply a lower bound, consistent with global estimates that place attrition at approximately 4% among midwives and 9% among nurses, to avoid overestimating workforce shortages.[12]

For the base case, we further assumed that the distribution of entering nurses and midwives across provinces and by sex would reflect the existing distribution of nurses and midwives across provinces and by sex.

Modelled scenarios

We modelled four scenarios for how the workforce might change between 2022 and 2035, making some assumptions that were kept for all scenarios, and some that were varied across the scenarios.

The ban on women's medical education was announced in December, 2024. In our model, changes to workforce entry begin in 2025, with a 2-year transition period to account for students already enrolled who might have completed their studies. We assumed that no new women nurses or midwives would enter the workforce after 2027, and that the ban would be fully restrictive.

In scenarios 2 and 4, we assumed that the number of male nurses entering the workforce would not differ from the base case; that the shortfall of women nurses and midwives would not be made up by men. In scenarios 1 and 3, we assumed that additional male nurses would enter the workforce, fully offsetting the shortfall of women nurses (ie, substitution effect). As midwifery was a women-only profession in Afghanistan, we assumed no male substitution for midwives under any scenario (table 2).

In scenarios 1 and 2, we assumed yearly attrition among women nurses and midwives would increase from 4% in 2025 to 6% in 2035, reflecting the ageing workforce due to lack of new entrants. In scenarios 3 and 4, attrition was assumed to increase more rapidly, reaching 12% by 2035 due to additional pressures from the ban. In all scenarios, women nurse and midwife attrition rates were scaled linearly from 2025 to 2035.

Gender sensitivity

To estimate province-specific gender sensitivity values as a measure of the substitutability of male health workers for women health workers in selected maternal and child health interventions, we solicited input from 41 health workers with extensive experience in health facilities across all 34 provinces of Afghanistan. At least one provider contributed data for each province, and in some provinces two providers participated; in these cases, responses were averaged at the provincial level.

Gender sensitivity values were defined as the proportion of women who would not seek care from a male provider for a given intervention, (assuming no other constraints). A value of 100% reflects an intervention that is highly gender sensitive, indicating that no women would be willing or able to seek care from a male provider, while a value of 0% indicates no gender sensitivity, and that all women could seek that particular service from a male provider (appendix pp 1–2).

See Online for appendix

Mathematical model

We used a mathematical model to assess the effect of two factors on care seeking for the six service categories under consideration: (1) health worker density, calculated as the combined number of nurses and midwives per 1000 population and (2) the proportion of the workforce who are women. Many other factors also affect care seeking for these services; however, to focus on these two factors associated with the ban, we assumed that those other factors would remain constant over time.

Our model assumes that, all else being equal, care seeking for the modelled services is a product of: (1) worker acceptability, which is driven by the proportion of the

	Number of male nurses	Number of female nurses	Number of midwives (all female)	Proportion of the workforce that is female	Population	Health worker density
Badakhshan	201	49	197	55·0%	1 557 355	0·29
Badghis	71	33	131	69·8%	862 147	0·27
Baghlan	179	42	179	55·3%	1 257 851	0·32
Balkh	392	194	383	59·5%	1 770 383	0·55
Bamyan	131	50	160	61·6%	769 309	0·44
Daykundi	104	53	150	66·1%	782 773	0·39
Farah	124	59	133	60·8%	792 420	0·40
Faryab	89	59	234	76·7%	1 620 144	0·24
Ghazni	423	165	427	58·3%	1 197 610	0·85
Ghor	169	29	167	53·7%	1 086 541	0·34
Helmand	415	92	286	47·7%	1 377 455	0·58
Herat	669	286	458	52·7%	3 250 258	0·43
Jowzjan	102	38	100	57·5%	682 190	0·35
Kabul	2798	1322	1734	52·2%	6 508 922	0·90
Kandahar	606	248	510	55·6%	1 869 931	0·73
Kapisa	182	62	168	55·8%	591 740	0·70
Khost	99	35	97	57·1%	1 119 107	0·21
Kunar	111	52	124	61·3%	719 902	0·40
Kunduz	258	102	194	53·4%	1 255 505	0·44
Laghman	108	60	136	64·5%	731 191	0·42
Logar	114	47	109	57·8%	658 140	0·41
Nangarhar	354	138	359	58·4%	2 404 579	0·35
Nimruz	57	38	61	63·5%	223 500	0·70
Nuristan	73	20	110	64·0%	173 475	1·17
Paktia	285	141	181	53·0%	839 768	0·72
Paktika	131	26	138	55·6%	609 066	0·48
Panjshir	169	134	135	61·4%	113 121	3·87
Parwan	223	57	240	57·1%	1 038 684	0·50
Samangan	76	37	135	69·4%	548 822	0·45
Sar-e Pol	106	66	107	62·0%	805 390	0·35
Takhar	206	65	184	54·7%	1 621 511	0·28
Uruzgan	117	32	131	58·2%	566 116	0·49
Wardak	143	34	131	52·6%	740 608	0·42
Zabul	103	12	99	51·9%	433 329	0·49

Table 1: **Baseline in 2022: the total number of male and female nurses and midwives, by population in Afghanistan, per province**

workforce who are women, and the gender sensitivity value for the intervention being modelled, and (2) worker accessibility, which is driven by health worker density.

Care seeking was defined as accessibility × acceptability; the multiplicative structure reflects that both factors are necessary conditions for care seeking to occur: even where services are physically available, women might not seek care if providers are unacceptable, and vice versa. This conceptual framework draws on established models of service coverage and access, including Tanahashi's service coverage cascade[13] and Penchansky and Thomas's dimensions of access,[14] which identify availability and acceptability as distinct, jointly necessary determinants of utilisation. Although the specific functional forms are developed for this context, the underlying logic, that access and acceptability must both be present, is well established in health systems research.

We used two variants of the model with differing approaches for estimating worker accessibility. The first model (A) used an exponential model for worker accessibility, which assumed that increases in health worker density will have diminishing returns for accessibility, and conversely, reductions in health worker density will have a greater effect on accessibility the closer health worker density is to zero. The second model (B) used a linear model, which assumed that worker accessibility will reduce in direct proportion to health worker density. This second model only works for reductions in health worker density, not increases, as continued increases in density would put accessibility beyond 100%.

The exponential model for accessibility was $A = \frac{1-e^{-D_2}}{1-e^{-D_1}}$. The linear model for accessibility was $A = \frac{D_2}{D_1}$. Acceptability was calculated as $B = \frac{F_2+(1-F_2)(1-G)}{F_1+(1-F_1)(1-G)}$, and care seeking was

	Male substitution for female nurses	Male substitution for female midwives	Female attrition rate (2025–35)	Conceptual interpretation
Scenario 1	Full substitution	No substitution	4% to 6%	Best-case scenario with modest ageing-related attrition; assuming health system capacity to replace female nurses with male nurses
Scenario 2	No substitution	No substitution	4% to 6%	Workforce contraction scenario driven solely by the ban and attrition, without any male substitution
Scenario 3	Full substitution	No substitution	4% to 12%	Extreme workforce contraction, assumes male nurses replace female nurses, but heightened attrition among remaining female staff due to ageing and ban-related pressures
Scenario 4	No substitution	No substitution	4% to 12%	Worst-case scenario with no substitution and heightened attrition

Table 2: **Scenario assumptions**

calculated as $C = A \times B$. In these equations, A was defined as the relative change in accessibility, B was the relative change in acceptability, C was the relative change in care seeking, D was health worker density (workers per 1000 population), F was the proportion of the workforce who are women, G was gender sensitivity, and subscripts for 1 and 2 referred to timepoints (1=baseline, 2=projected).

Mortality estimation

After estimating the relative change in care seeking for each of our six categories of interventions, we used these estimates to calculate the expected change in coverage of 76 interventions from 2025 to 2035, and we used these coverage estimates and the Lives Saved Tool (LiST) to estimate changes in maternal, neonatal, and child mortality.[15]

LiST is a mathematical model that estimates changes in maternal, neonatal, and child mortality based on intervention coverage levels. Additional details on LiST and its underlying methodology are described elsewhere.[15]

Our assumption was that any reduction in care seeking would translate to an equivalent reduction in coverage. This fits with most conceptualisations of effective coverage that have care seeking as a necessary step in a cascade. Therefore, any reduction in care seeking will carry through to coverage itself. We applied the reductions to the baseline coverage values in LiST for 76 interventions, which were primarily taken from the 2023 MICS household survey. For each individual intervention (eg, magnesium sulphate for pre-eclampsia or eclampsia) we applied the reduction in the relevant service category (eg, childbirth services; appendix pp 3–8).

Role of the funding source

Staff of the Global Financing Facility, the funder of this work, provided support with study design, data collection, data analysis, data interpretation, and manuscript preparation. An internal review process at the World Bank was conducted before clearance of the manuscript for submission for publication.

Results

In all scenarios, the overall workforce was projected to be smaller in 2035 than in the base case, with a pronounced decline in the number of providers who are women over time (figure 1). In the absence of the ban, projections indicated that the women nursing and midwifery workforce would have grown from 11 963 to 15 475 with a sustained pipeline of trained nurses and midwives. However, under current conditions, our projections suggest that the workforce will instead decline to between 7449 and 5049, under the best and worst scenarios, respectively.

Next, we projected health worker density over time under the base case and four scenarios (figure 1B). There was wide variation in the 2022 baseline estimates by province, with some provinces having many more health workers per 1000 population than other provinces. Under the base case, health worker density remained constant over time. Across all scenarios, we found declines in health worker density, to be expected given the decline in absolute numbers of nurses and midwives. In the scenario projections, the differences among provinces were due to the differences in the starting ratios of male nurses to women nurses and midwives. At the national level, we projected a decrease in health worker density from 0·53 workers per 1000 population in 2022 to 0·42 workers per 1000 population in 2035 under scenario 1, and from 0·53 to 0·33 workers under scenario 4.

Under all scenarios, the sex ratio of the workforce (nurses and midwives) declined, with fewer health workers who are women relative to those who are men (figure 1C). In scenario 2, the proportion of the workforce who are women decreased from 57% in 2022 to 39% in 2035. In scenario 3, the proportion decreased from 57% to only 28%. Despite baseline levels differing across the provinces, all provinces show the same downward trend, reflecting our assumption that new male nurses enter the workforce proportionally to the existing number of male nurses in the province and that the reduction in women nurses and midwives is also proportional to the existing provincial workforce.

We estimated changes in care seeking for six selected health services, nationally, from 2022 to 2035 under each scenario (figure 2). The scenarios using model A (ie, exponential) produced smaller reductions than those using model B (ie, linear), which reflects how the two models respond to changes in health worker density: reductions in the exponential model start smaller and get larger the closer health worker density is to zero; in the linear model, smaller reductions in health worker density have a bigger effect.

Maternal and reproductive health services to women showed the biggest declines under all scenarios due to gender sensitivity. Among the six interventions, the biggest

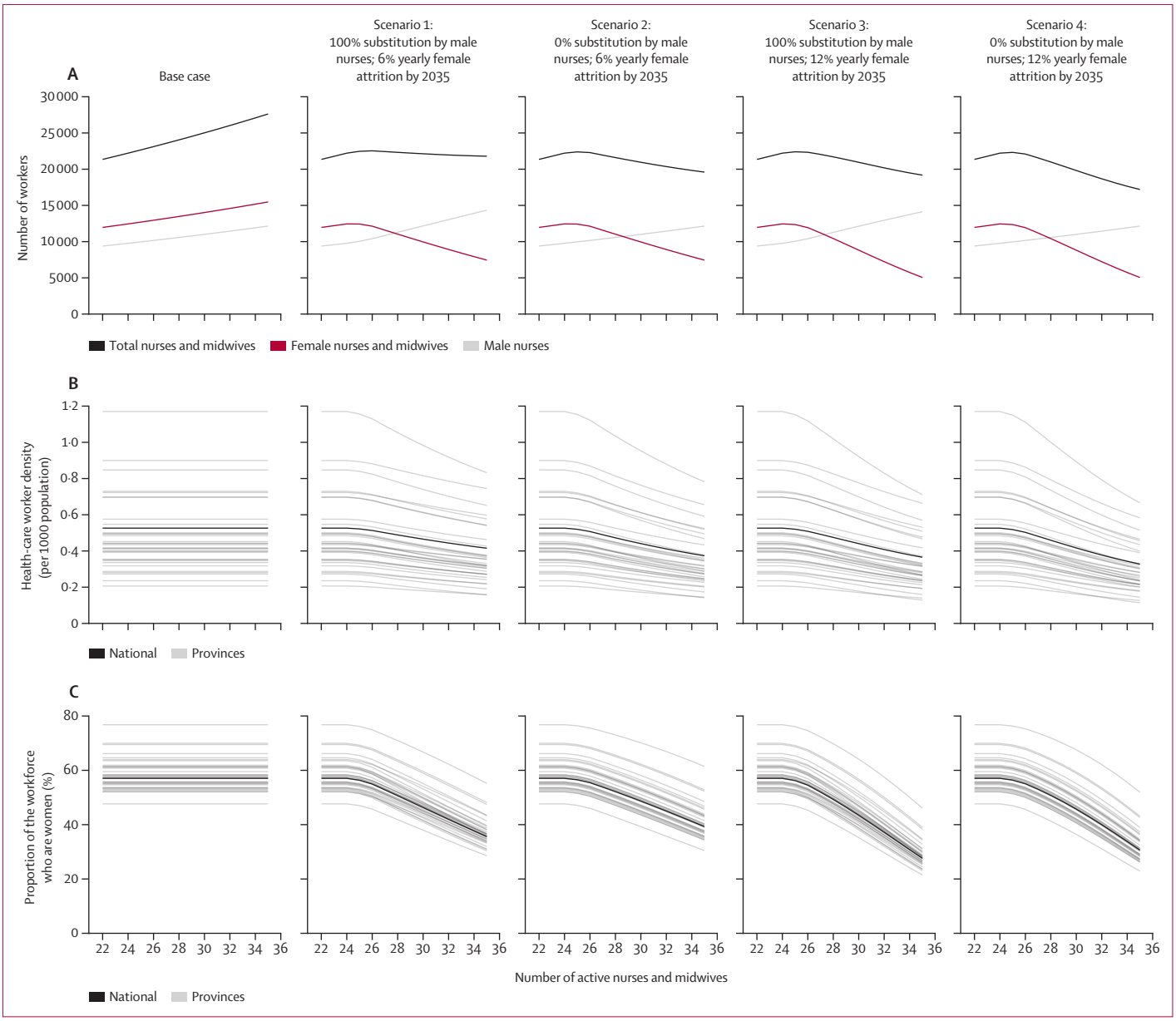

Figure 1: **Projected changes to the health workforce (nurses and midwives) over time**
(A) Change in the number of active nurses and midwives in the workforce over time under different scenarios. (B) Health-care worker density over time for the base case and under the four scenarios. This density is calculated as the combined number of nurses and midwives per 1000 population. (C) Proportion of nurses and midwives who are women over time.

reductions were seen for childbirth services, which are the most sensitive to the sex ratio of the workforce. The largest declines occur under scenario 4B, with childbirth services falling to just 33% of their baseline prevalence, reflecting the high gender elasticity of this intervention. But even under the best-case scenarios with slow attrition of workers who are women (scenarios 1 and 2), these services would be halved (48–51% of baseline). Other services for women, including family planning, antenatal care, and postnatal care, also showed substantial reductions under scenario 4B, ranging between 37% and 35% of their baseline levels. Even under scenario 1A, which reflected the least severe disruptions, we found decreases in care seeking for these services by almost half (to 53–55% of baseline).

Services primarily for children—vaccination and integrated management of childhood illness—were also affected but less drastically. The best case was under scenario 1A, resulting in reductions to 76–80% of baseline, and the worst case was under scenario 4B, resulting in reductions to 56–59% of baseline.

In terms of mortality effects, the number of additional deaths rose under all scenarios, varying with the severity of reductions in care seeking (figure 3). Under scenario 1A, which reflects the least severe reductions, there were an

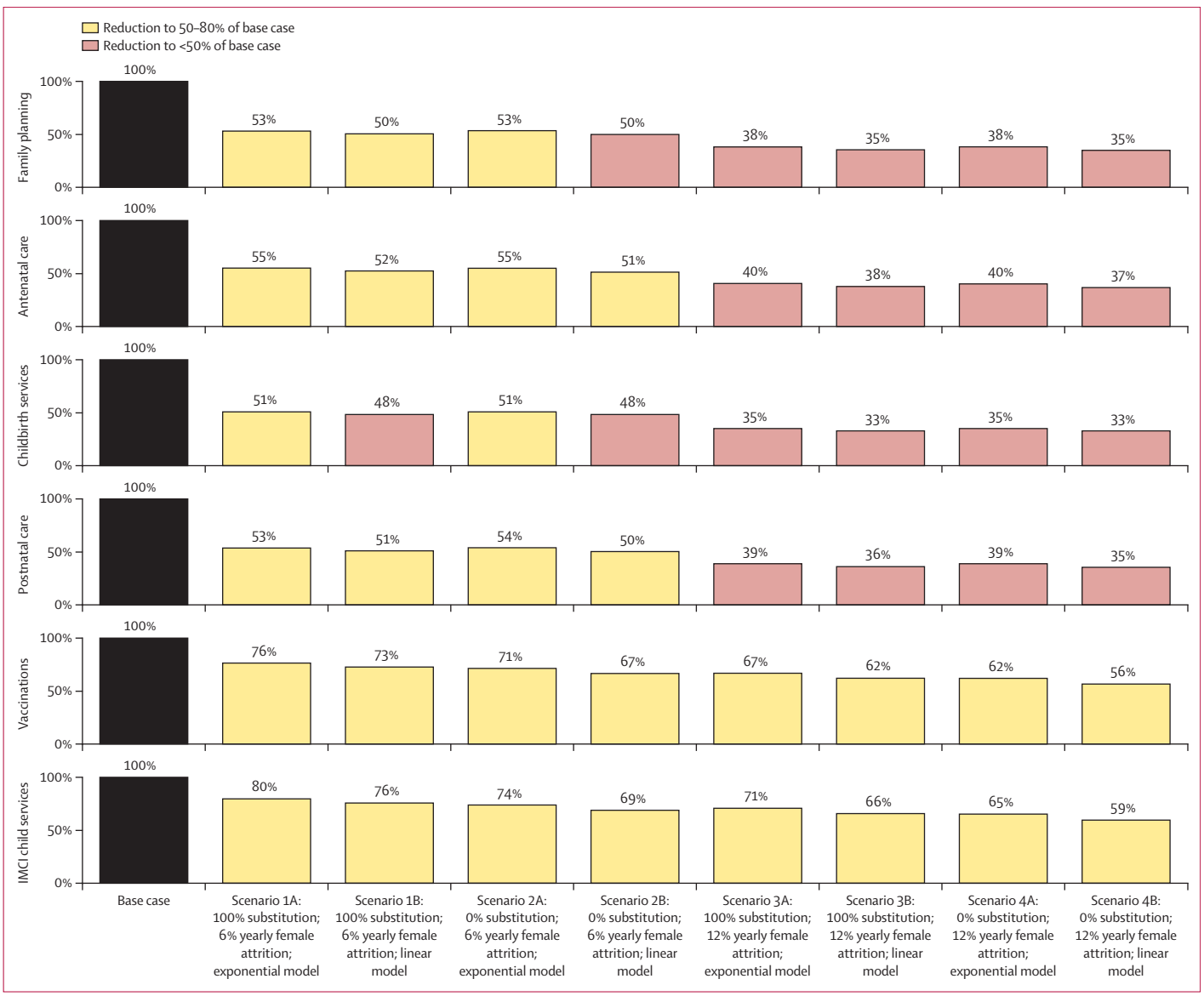

Figure 2: **Changes to coverage of family planning, antenatal care, childbirth services, postnatal care, vaccinations, and IMCI child services over time, by scenario**
IMCI=Integrated Management of Childhood Illness.

estimated 7438 excess neonatal deaths, 10 255 additional child deaths, and 3215 additional maternal deaths. By contrast, scenario 4B, which represents the most severe reductions, showed an estimated 10 864 excess neonatal deaths, 16 522 additional child deaths, and 4509 maternal deaths.

These excess deaths correspond to a rise in NMR from 35 to 40 deaths per 1000 live births under scenario 1A (ie, 12% increase), to 42 per 1000 under scenario 4B (ie, 17% increase). The mortality rate for children younger than 5 years increased from 59 to 65 under scenario 1A (ie, 10% increase) and to 69 under scenario 4B (ie, 16% increase). The MMR showed the sharpest increase, from 622 to 805 maternal deaths per 100 000 live births under scenario 1A (ie, 29% increase), and to 878 under scenario 4B (ie, 41% increase).

Discussion

This study provides modelled projections of the impact of Afghanistan's recent ban on women's participation in midwifery and nursing education. Our analysis shows that the ban will have substantial negative impacts on the size of the health workforce, its gender responsiveness, health-care service access, and mortality outcomes. These findings align with evidence underscoring the availability of health-care cadres who are women—such as nurses and midwives—as a key determinant of women's use of reproductive and maternal health services.[16–18]

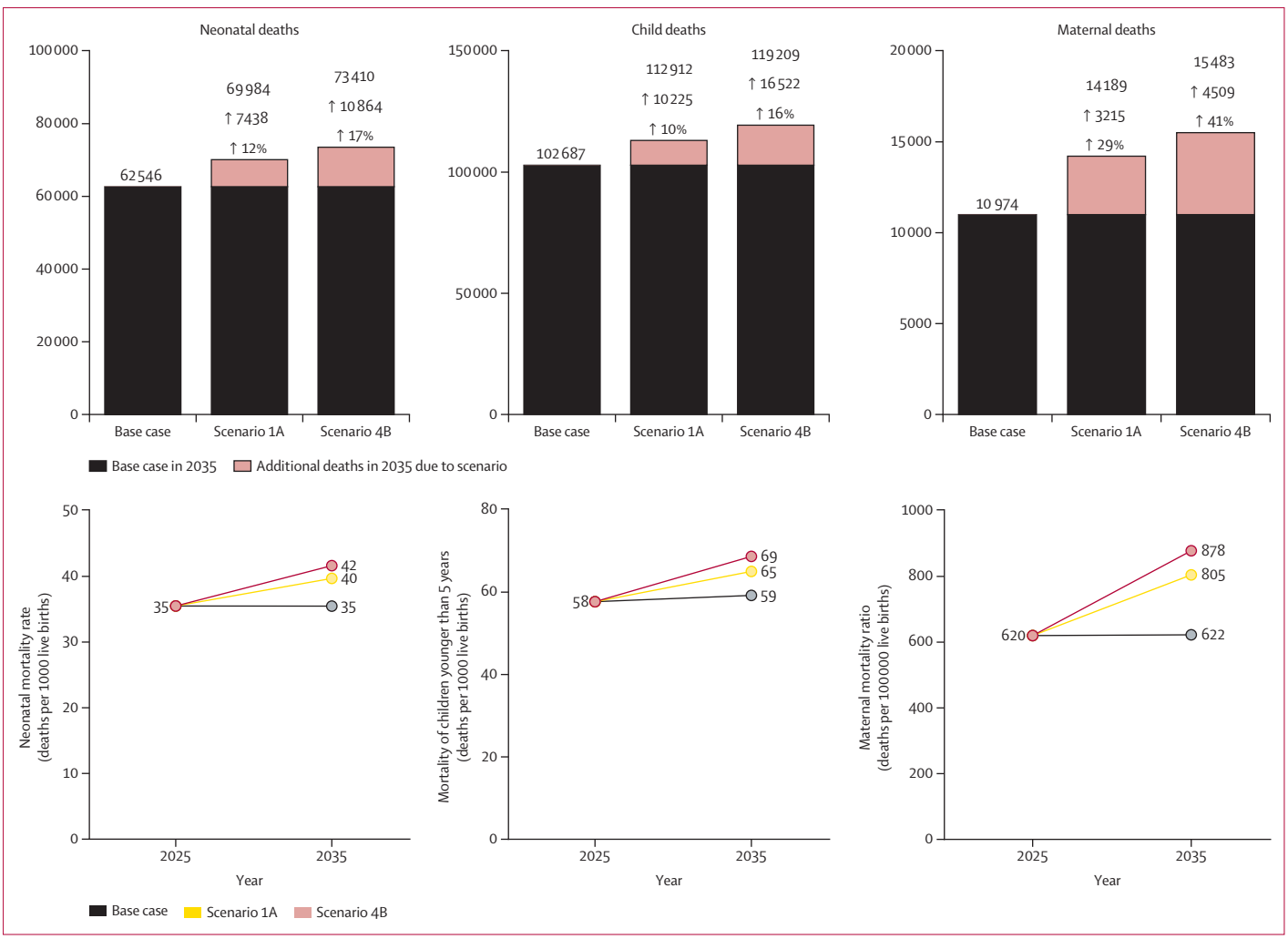

Figure 3: **Changes in neonatal, child and maternal deaths under lowest-impact and highest-impact scenarios**

The modelling projected reductions in coverage across all six services considered, with variation by service and scenario, depending on attrition rates and substitutability of male providers. Although child health services such as vaccination and integrated management of childhood illness would be less affected, coverage would still decline by at least 20% in the best-case scenario and up to 34% in the worst-case scenario. This finding corresponded to increases in child mortality of 10–16% and neonatal mortality of 12–17%.

Although we present national estimates, provincial impacts vary substantially based on baseline workforce gender composition and local gender sensitivity. Provinces with the highest proportion of women health workers—including Faryab (77%), Badghis (70%), and Samangan (69%)—face the largest projected workforce declines. Conversely, provinces with lower female workforce shares, such as Helmand (48%) and Kabul (52%), showed smaller absolute reductions. Variation in gender sensitivity might partially offset declines in some areas, but overall, the analysis underscores the profound impact of gender inequality, which not only produced the ban but will have substantial consequences for women's health over the next decade. That women would be unwilling or unable to seek care for these basic health-care needs from male providers in the absence of professionals who are women is not surprising given the constraints that women in most parts of Afghanistan face as workers and users of health care. Indeed, providers have already reported declines in the availability and quality of services and reluctance by women to visit facilities due to mobility restrictions.[19]

Importantly, these projections should not be perceived as deterministic predictions, but rather as motivation for action. The variation in possible implications across six services and nine scenarios reflecting a range of assumptions should demonstrate that potential consequences can vary with adjustment to a few parameters. These findings should encourage policy makers, donors, and international actors to take action to reverse this ban and mitigate these consequences.

Our findings make a strong case for the urgent need to first and foremost work on reversing the current ban which restricts women's participation in nursing and midwifery education. As articulated in recent commentaries, the international community must mobilise to ensure the bans are lifted immediately.[20,21] Pending such a reversal, alternative pathways for women to receive midwifery and nursing education must be considered. Informal training centres or online medical education combined with mentorship and supervision from existing seasoned midwives might be options to consider. Such approaches, however, must not compromise the ability of midwives to acquire the core competencies they need to meet international standards such as those by the International Confederation of Midwives and International Council of Nurses.[22,23] For example, pairing online didactic education with in-person in-service clinical training at accredited public Emergency Obstetric and Newborn Care training centres before midwives and nurses in training can practice is one option. Following graduation, extended mentorship and clinical supervision by experienced midwives and nurses at health facilities would be essential to ensure quality and patient safety. Moreover, opportunities for continuing education through bodies such as the Afghan Midwives Association or other bodies could further ensure ongoing skill development. Facilitating access to training opportunities in neighbouring countries or temporarily mobilising health workers from those countries could also be options. Similarly, the deployment of trained but to date not employed health workers who are women, and the expansion of community-based interventions might also bridge gaps in service delivery. These approaches will require thoughtful consideration and refinement in collaboration with health experts to ensure that they are feasible, appropriate, and acceptable to the community. Additional financing will also be required to actualise any of these options in an environment of constrained and shrinking fiscal space.

The models in this study should be interpreted while considering several limitations. We assumed that other determinants of utilisation—such as funding, accessibility, insecurity, and demand—would remain constant, which might not hold in practice. The base case assumed constant health worker density, which might be optimistic, and our estimates reflect the differential impact of the ban rather than absolute changes. We also assumed a fully restrictive ban after 2027, although in reality it has been more immediate, making our estimates conservative. The measure of gender sensitivity used in this study was based on a limited provider survey and does not capture within-province variation. We modelled binary substitution scenarios because of a paucity of empirical evidence, although intermediate outcomes can be inferred. Data limitations and the inclusion of only six services might also underestimate the full impact. External validation is not possible given the unprecedented nature of the ban; however, model outputs were internally consistent, and mortality estimates were derived using LiST.

Limitations notwithstanding, our findings point to the profound impact of the ban on the health workforce and, ultimately, on mortality among women and children. We hope these findings motivate action to prevent reversals in progress made in maternal, reproductive, and child health in Afghanistan.

Contributors

SE, TR, and AM conceptualised and designed the study. TR conducted the formal analysis, and visualisation, while SE conducted interpretation, and wrote the manuscript. AM supervised the entire study and reviewed and provided critical feedback on the analysis, visualisation, and interpretation. HuS and SM contributed to the study conceptualisation, supervision, and results interpretation. HaS, HuS, MMF and MC critically reviewed and edited the manuscript for intellectual content. TR and SE accessed and verified all input data, model outputs, and the results presented in the manuscript. All authors had full access to the data, reviewed and approved the final manuscript, and accept final responsibility for the decision to submit it for publication.

Declaration of interests

We declare no competing interests.

Data sharing

The data underlying this article are all publicly available through WHO's Human Resources for Health Situational Assessment and the Afghanistan Multiple Indicator Cluster Survey.

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