

of native ventricular microanatomy from diffusion tensor magnetic resonance and other imaging methods (9).

The mechanical behavior of the spun scaffolds in this study also did not match that of native myocardium. The myocardium consists of muscle fibers sheathed in a criss-cross network of crimped collagen fibers that bear little load at low strains (10). As such, myocardium is soft at low strains and stiffens at high strains as the collagen fibers uncoil (11). By contrast, FRJS produces straight, bundled fibers that are constantly engaged and stiff when loaded because they do not replicate the nanoscale configuration of collagen fibers. Stiff scaffolds both resist constriction and reduce the contractile forces generated by cardiomyocytes (12). This effect was exacerbated by using relatively few immature cardiomyocytes. Emerging strategies to mature cardiomyocytes through specialized media (13) or culture substrates (14) would increase their contractility, but a concomitant softening of the scaffold would still likely be needed for physiological function. Alternative bioprinting methods such as melt electrowriting can produce soft tissue-like mechanics through precise control of single-fiber microarchitecture (15), but not in complex 3D tissue geometries or with the speed of FRJS. This remains a challenge: Can hierarchical organization over spatial scales beyond that demonstrated by Chang *et al.* be achieved while maintaining the versatility and throughput of FRJS?

To achieve a bioengineered heart, a blood-compatible vasculature, an electrical conduction system, and means for avoiding immune responses are still needed. Large metabolically active, cell-dense organs need lots of cells (of different types) and lots of oxygen. The heart is more than a simple pump. Nonetheless, Chang *et al.* have taken a step toward making biomechanically equivalent, functional structures. ■

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POLICING

Accessing justice for survivors of violence against women

A police reform experiment in India shows mixed results

By Graeme Blair¹ and Nirvikar Jassal²

One in three women has survived physical or sexual violence in her lifetime. In a wave of reforms designed in part to increase women's access to justice for such crimes, governments around the world instituted gender quotas in police hiring (see the photo), policewomen-run counseling centers, women-only stations, and legal mandates that women officers exclusively handle cases of gender-based violence. On page 191 of this issue, Sukhtankar *et al.* (1) report results of the first randomized trial on these reforms. The researchers partnered with the state police in Madhya Pradesh, India, in the Hindi heartland with a reputation for deep-rooted patriarchy, to randomize the introduction of “women's help desks”—spaces within police stations where women officers can interface with women complainants. The results are mixed: More incident reports were filed and some police officer attitudes toward violence against women changed, but women were no more likely to report crimes and the arrest rate was unaffected.

Gender-based reforms in policing share similar goals but differ in design and underlying motivation. They can be viewed as falling on a spectrum from integration to separation. On the integrated end, quotas and affirmative action increase the representation of women in the police. Typically, women officers are then assigned the same tasks and roles as men officers. This may shift

norms and behaviors of officers and citizens by promoting contact between policemen and policewomen, as well as through a role-model effect. On the separated end, governments establish women-only police stations. This may empower policewomen by reducing contact with sexist policemen, and encourage complainants to report in spaces supposedly removed from patriarchal norms. Such “enclaves” also imply occupational separation: Policewomen are tasked solely with the complaints of other women, often based on essentialist assumptions that they are innately suited for such roles. Separated institutions are an implicit acknowledgment of the limits of integration: if gender norms are unlikely to change in the short term, the state must resign itself to the segregation of women officers and complainants.

Previous studies have examined the extremes of the reform spectrum, with more evidence about separation than integration. Research on separated institutions finds mixed results. Women-only police stations improved police legitimacy and attitudes toward violence against women in Brazil (2). “Women's justice centers” in Peru that combine police services with legal and medical aid increased police filings and arrests (3). However, women-only stations in India led policemen in regular police stations to refer survivors to alternate sites, forcing victims to travel longer distances to access justice (4, 5). Women officers staffing these sites may not necessarily be more accommodating to women complainants either, because policewomen are not immune from exhibiting gender bias (6, 7). By contrast, the integration of women officers into mainstream law enforcement through affirmative action

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Women police officers serve at a station house in Delhi. Several of India's states and all its union territories, including Delhi, have installed a 33% gender quota in police hiring to increase women's comfort with law enforcement.

or quotas not only increased registrations of violence against women in the US but also improved police efficacy (8). Measures that integrate women officers in security agencies by enabling them to carry out the same tasks as men can diminish stereotypes (9).

The Sukhtankar *et al.* experiment, one of the largest of its kind, provides important new evidence on the middle of the theoretical reform spectrum. Women's help desks are a form of separation—within regular police stations as opposed to fully segregated sites—that also retain occupational divides between administrators staffing the institutions and other officers. The authors found that the intervention did not increase the likelihood that women report violence to the police, but it did increase the filing of incident reports that do not lead automatically to criminal investigations. They found only weak effects on formal registrations that warrant mandatory investigation. The help desks did not increase arrests of abusers. Although the intervention increased officers' knowledge of the law, it did not generally alter gender norms. Policewomen's perceptions that women report false or exaggerated claims fell slightly, but policemen's attitudes were unchanged.

The null effect on arrests admits several interpretations. For domestic violence in particular, women may wish abuse to stop but not for the perpetrator to be arrested. But because information on what police do in response to a report was not captured, the null may also reflect police inaction, either because women request investigations and are ignored or because the police act but the inquiries do not result in arrests. Police also may not have completed investigations by the time data were collected, 2 months after the intervention activities ended. In addition, law enforcement may have acted, but not by making arrests. Women's help desks may have provided restorative or rehabilitative justice instead of standard police services, e.g., informal couples' counseling for crimes such as dowry-based harassment and marital rape.

Future work should disaggregate the types and gradations of crime affected by police reforms. Institutions like help desks may improve registrations of crimes like dowry-based harassment, but police may not take action on other crimes like gang rape or acid attacks, which they may face pressure to downplay in official statistics. If these institutions emphasize alternative

modes of justice, future researchers should investigate whether such measures lead to better outcomes for survivors or are merely window dressing. For instance, does officer-mediated reconciliation of victims with abusers inside station-houses empower complainants, or are such measures simply a mechanism by which the police avoid taking formal action against abuse? Punitive justice may discourage reporting because victims may not necessarily desire the arrest of intimate partners; then again, rehabilitative justice may appear toothless and fail to deter violence.

A key challenge in studies of access to justice is distinguishing whether effects are driven by an increase in citizens trying to report or officers recording those complaints. Sukhtankar *et al.* counted citizens entering police stations from video surveillance camera footage to distinguish between reporting and registration. Future research should go further by linking police registrations to court records, allowing cases to be traced across successive stages of investigation, trial, and verdict. Improvements in data availability in India and China now make this data linkage a possibility (10). This would allow researchers to probe whether policies like women's help desks mostly affect the first step of accessing justice (case filings) or also change later outcomes, such as convictions of suspects. Linking multiple stages of the justice system would reveal where and when discrimination creeps into the process.

The short-term outcome measurement by Sukhtankar *et al.* leaves open the possibility that police behavior does change but only in the long run, and conversely that the increases in case filing may not endure. Effects may dissipate for many reasons. For example, when partnerships with academics end, police leaders' prioritization of the reform may wane. Maintaining buy-in from police leaders may be a key driver of successful implementation (11). The duration of implementation (distinct from how long after implementation measurement takes place) may also be important. Because the Sukhtankar *et al.* intervention lasted only 13 months, new studies with longer time horizons might find different effects.

More research is needed to understand the implications of gender-based police reform on personnel dynamics and gender relations within police forces. Future scholarship could probe whether officers appreciate being deployed to institutions like women's help desks, or whether they feel that that deployment prevents them from handling diverse cases. If policewomen are disproportionately or exclusively tasked with investigating other women's complaints, might this diminish professionalization and induce

type-casting, including among women complainants and police colleagues?

Another important inquiry concerns the impact of police reforms on actual rates of violence against women. Early evidence is mixed (12). Subsequent scholarship should examine how institutional reforms operate in conjunction with other tools, including media and educational campaigns (13), increasing women's representation in elected office (14), limiting behaviors such as alcohol abuse, or resource transfers targeted to women (15). In addition, researchers should explore whether reforms targeted at women can also affect gender-based violence against men and LGBTQ citizens and their access to justice for such crimes.

Recent studies have introduced new standards for transparent ethical decision-making, including scrutinizing the human rights records of police partners and monitoring harm "red lines" (11). Sukhtankar *et al.* push further. For instance, to mitigate a potentially unintended consequence of their scheme in assigning policewomen to women's help desks, they worked with law enforcement to avoid reassigning women officers from other stations, which might have displaced personnel and undermined access to justice for women in untreated areas. Subsequent scholarship should follow their example in transparently describing harm reduction practices and consider pre-registering ethical decision-making criteria. With these measures, researchers should make the case, as Sukhtankar *et al.* persuasively do, that the risks of conducting randomized interventions must be balanced against the value of building more evidence about which police reforms work—and which do not. ■

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