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Opportunities and Burdens: Women's Labor, Caregiving, and Bodily Experience in the Altay Kazakh Pastoral Region During the Process of Modernization

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Abstract

In parts of the Altay pastoral region, livestock management and seasonal transhumance have long defined daily life, with limited access to healthcare, transportation, and commodity markets. In recent years, the expansion of the primary healthcare system, infrastructure improvements, and non-agricultural employment at the county level have expanded women pastoralists' access to healthcare services, employment, and mobility opportunities. Yet these developments have not reshaped existing gender-based divisions of labor or caregiving responsibilities. Drawing on fieldwork conducted in Burqin County and the summer pasture area on the mountainside of Tolehaite in Xinjiang, this study uses participant observation and semi-structured interviews to explore how opportunities and burdens are redistributed among women pastoralists amid the process of modernization. Findings reveal that while some younger women enter the urban workforce, older women who remain in the pastures continue to shoulder heavy livestock and domestic duties. Meanwhile, female primary healthcare workers face conflicts between professional demands and childcare responsibilities. Furthermore, although modern medicine can mitigate some physical harm caused by labor, it does little to change the underlying burden of work. This paper argues that understanding pastoral society's modernization requires attention not only to increased resources but also to how labor, caregiving responsibilities, and bodily costs are reallocated across different groups of women pastoralists.

Keywords

modernization, Kazakh pastoral region, Altay, female labor, caregiving responsibilities, bodily experience

1. Introduction

The Kazakh pastoral region is undergoing a sustained and profound transformation driven by modernization. In recent years, China's public healthcare system has expanded to more and more urban and rural communities. Meanwhile, transportation, communications, and other infrastructure have steadily improved, and tourism, service industries, and other non-agricultural employment opportunities have increasingly reached pastoral areas. For women, who have long shouldered the responsibilities of household production, domestic chores, caregiving, and childbearing, these changes open up new possibilities for healthcare, employment, and social mobility. However, the influx of new resources does not mean that existing divisions of labor, family responsibilities, and bodily burdens disappear overnight. On the contrary, new opportunities often coexist with

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old obligations, potentially redistributing the labor, caregiving, and bodily costs among different women in unexpected ways.

This paper therefore looks beyond the simplistic question of whether modernization has improved women pastoralists' lives. Instead, it asks: When new kinds of resources, such as healthcare services, employment opportunities, and infrastructure, enter a nomadic society, what opportunities do women in different generational, occupational, and familial positions gain, and what persistent or newly generated practical burdens do they bear? Under the constraints of existing gender-based divisions of labor and family responsibilities, how do they mobilize resources, including healthcare services, family networks, markets, and local knowledge, to adapt in practice?

Fieldwork for this study was primarily conducted in Burqin County and the summer pasture area on the mountainside of Tolehaite in Xinjiang, by means of participant observation and semi-structured interviews. Participant observation focused on women pastoralists' daily labor, caregiving for family members, illness management, and bodily practices. Interviews were carried out with ordinary women pastoralists, township-level female health workers, and grassroots medical practitioners, covering topics such as the division of labor, physical health, use of medical resources, and non-agricultural employment.

The paper draws first on discussions in the anthropology of the body and medical anthropology. Marcel Mauss's work on "body techniques" shows that bodily practices are acquired through imitation and socialization within specific social environments [1]. Bourdieu's discussion of habitus and practice further suggests that social structures become sedimented as embodied dispositions toward action [2]. Scheper-Hughes and Lock highlight the connections between the individual body, the social body, and the body politic [3], while Martin's research on the female body reveals how medical knowledge, gender, and social relations jointly shape bodily experience [4]. Building on these insights, the study interprets women pastoralists' experiences of fatigue, pain, illness, and childbirth as concrete manifestations of social transformation at the bodily level.

The paper also engages with existing research on medical knowledge and practice. Farquhar emphasizes that medical knowledge is not a fixed set of rules but is constantly invoked and generated in actual practice [5, 6, 7]. Studies by Lai Lili and Judith Farquhar on ethnic minority medicine further show that state-led knowledge organization and standardization do not simply erase local practices; rather, normative knowledge and local experience often coexist and mutually transform each other [8, 9]. Following this line of thinking, the paper examines how women pastoralists selectively combine modern medicine, family experience, and local knowledge of care.

The paper further situates modernization within the framework of gender-based divisions of labor and the unintended consequences of social interventions. Jing Jun and Xue Weiling point out that when social interventions enter specific local societies, they often produce "unintended outcomes" beyond policy design [10]. This perspective prompts further inquiry: Who benefits from the resources brought by healthcare services, infrastructure, and non-agricultural employment opportunities, and who bears the new costs? The modernization process does not simply add resources; it may also reconfigure opportunities, responsibilities, time, and bodily burdens.

Within this analytical framework, the paper first outlines the new resources and opportunities that modernization brings to women pastoralists. It then analyzes how productive labor, caregiving, and bodily costs are redistributed among different groups of women, before examining how women mobilize family networks, markets, public services, and local knowledge to adapt under structural constraints, as well as the limitations of these adaptations.

2. Resource Inflows and the Reorganization of Daily Life in the Process of Modernization

2.1 The Evolution of the Pastoral Healthcare System: From "Camel Hospitals" to Station-based and Mobile Outreach Services

The Tolehaite summer pasture lies in a mountainous area where herders live scattered across the landscape and follow seasonal transhumance. For a mobile pastoralist population, dispersed settlement patterns, seasonal migration, and travel distances have long posed significant barriers to healthcare access, which is a challenge

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repeatedly noted in global research on healthcare services for mobile pastoralists [11]. Historically, some pastoral areas in Xinjiang addressed the difficulties created by seasonal herder migration through mechanisms such as pastoral hospitals, medical stations in summer pastures, and mobile outreach services [12, 13].

In recent years, as the primary healthcare system has progressively extended into pastoral areas, pastoralists' access to medical services has also changed. By establishing fixed medical stations, following seasonal transhumance, and delivering medication into mountain areas, mobile clinics have brought healthcare services, which were previously concentrated in townships and county seats, further into summer pastures. To some extent, this has reduced the distance and transportation barriers pastoralists face when seeking medical care.

At the mobile clinic in the Tolehaite summer pasture, I interviewed Dr. Murat, who has practiced medicine for over twenty years. He recalled that their medical institution dated back to the "camel hospital" of the 1980s. At that time, health workers had to follow herders during transhumance, providing basic medical services through mobile outreach. Today, the mobile clinic has established relatively fixed medical stations staffed with doctors, nurses, laboratory technicians, and massage therapists. It offers basic medical services in internal medicine, gynecology, pediatrics, and other fields, while also enabling on-site medical insurance reimbursement.

Beyond these fixed medical stations, the clinic continues to provide mobile outreach services. In summer, medical teams are stationed in pastoral areas according to herders' transhumance patterns. They can prescribe medications in advance for extended periods for patients with chronic conditions such as hypertension. In cases of limited mobility or emergencies, they use motorcycles or off-road vehicles to deliver medication and provide house calls deep in the mountains. When patients present with complex or severe conditions requiring surgical treatment, they refer them to higher-level hospitals for further diagnosis and care, as the poor mountain roads and limited local medical facilities cannot support such care.

From the early reliance on camels to accompany herders during transhumance to the current model combining fixed medical stations with mobile outreach services, the pastoral healthcare system has undergone significant transformation. Yet modern medicine has not entirely supplanted the earlier mobile outreach approach; rather, the pastoral healthcare system has developed a relatively flexible primary healthcare model grounded in the realities of dispersed herder settlements and seasonal transhumance. This model allows medical professionals and resources to reach high-altitude summer pastures more effectively, while also shortening, to some degree, the spatial distance between herders and medical institutions.

2.2 Changes in Childbirth Settings: From Giving Birth at Yurts to Delivering at County-level Hospitals

Like everyday healthcare-seeking practices, the settings in which women pastoralists give birth have also changed markedly. In the past, when transportation and medical resources were limited, some women gave birth in yurts within the summer pastures, relying primarily on help from neighbors and experiential knowledge for delivery. Today, as the primary healthcare system and maternal health management have progressively extended into pastoral areas, prenatal examinations and deliveries are increasingly shifted to county-level hospitals. Childbirth has moved from a matter handled within the family and neighborhood to a process involving sustained intervention by the professional medical system.

An elderly woman at the Tolehaite mountainside summer pasture recalled that all four of her children were born in a wool yurt in the summer pasture. At that time, no medical professional came to the mountains for deliveries; childbirth relied mainly on help from neighbors, and necessary supplies were shared among surrounding families. She herself had assisted in neighbors' home births. In contrast, the way women pastoralists give birth today has fundamentally changed. According to Dr. Li, a Traditional Chinese Medicine practitioner at the township health center, pregnant women under their jurisdiction are required to go to the county-level hospital for prenatal examinations and delivery, as the township health center no longer handles deliveries. Dr. Murat from the mobile clinic also mentioned that expectant mothers in pastoral areas typically need to travel to designated hospitals to give birth.

Compared to the earlier practice of childbirth relying primarily on neighborly assistance, accessing county-level hospitals means that women in pastoral areas can receive more stable obstetric medical support, and maternal and infant safety is increasingly covered by the public healthcare system. At the same time, medical

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insurance reimbursement eases, to some extent, the financial burden of medical expenses associated with traveling to the county seat for delivery.

However, the shift in the location of childbirth also brings new practical costs. Expectant mothers must leave the pasture early to travel to the county seat, and some families need to arrange for relatives to accompany them, bearing additional expenses for accommodation, transportation, and time. For households whose livelihoods still depend primarily on livestock raising, the temporary absence of the mother and her accompanying family members may disrupt existing labor arrangements. Thus, while access to professional medical resources enhances maternal health protection, it also reorganizes the time, labor, and economic resources that families must invest in the childbirth process.

This transformation is not unique to Altay. Previous studies indicate that over the past two decades, institutional delivery rates in China's rural and ethnic minority areas have steadily increased, and pregnant and postpartum women have been progressively enrolled in a professional medical system centered on county- and township-level medical institutions [14, 15].

2.3 Improvements in Living Supplies and Housing Conditions

Beyond medical services, changes in commodity distribution and housing conditions have also increasingly reshaped the daily lives of women in pastoral areas. For pastoralist populations whose settlements are dispersed and who follow seasonal transhumance, access to water, sanitation facilities, and daily necessities is often constrained by geography and infrastructure. Previous studies also note that their transhumance makes it harder for conventional water supply, sanitation, and hygiene services to reach them [16]. In recent years, Xinjiang has steadily improved the living environment in rural and pastoral areas, including water supply, domestic sewage treatment, toilet renovation, and public sanitation facilities. In the field data collected for this study, these changes are concretely reflected in access to hygiene products, living spaces, and daily hygiene conditions.

A female chief physician at the township health center compared past and present living conditions for women in the summer pastures during an interview. She said: "Nowadays, sanitary pads are basically available everywhere; there's no need to use gauze anymore during menstruation. There are shops everywhere; getting daily essentials is no longer a problem." She observes that since grocery stores and commercial networks entered pastoral areas, everyday items such as sanitary pads have become much easier to obtain, and the ways women manage bodily needs like menstruation have correspondingly changed.

Living spaces have also been transformed. The female physician noted: "Yurts are different now. Before, there was only one room in a yurt; now most of them have two or three rooms, with rooms arranged by the occupants themselves, including bathrooms and so on." Beyond more refined spatial divisions, some herder households have also improved their ability to maintain daily hygiene by heating water, among other measures. Notably, the physician even believed that the hygiene conditions of some herder households today are "no worse than those in the urban areas." Though subjective, her judgment indicates that, in local people's experience, the summer pasture is no longer simply synonymous with material scarcity and inconvenience.

Thus, improvements in commodity distribution and housing conditions bring not only greater everyday convenience but also substantive changes in the material conditions for women's bodily care. From the availability of hygiene products to changes in bathing, cleaning, and living spaces, new commodities and infrastructure have gradually become part of women's daily bodily practices. Yet these changes primarily reflect improved living conditions and increased resources for bodily care; whether they further alter the domestic and labor responsibilities borne by women requires continued discussion in conjunction with the subsequent analysis of the division of labor.

2.4 County-level Non-agricultural Employment Opportunities and Generational Livelihood Diversification

With the expansion of county-seat employment opportunities, some young women in pastoral areas have begun to gain career options beyond animal husbandry. Unlike the previous generation whose lives revolved around herding, transhumance, and household production, the younger generation has been able to find urban

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employment and forge a different livelihood path, thanks to the growth of county-level logistics, tourism, and service industries.

An elderly woman residing at the mountainside of the Tolehaite summer pasture has lived in pastoral areas since graduating from junior high school, spending her years following livestock through seasonal transhumance. Her two daughters, however, chose to leave the pasture and work in the county seat of Burqin, one in logistics and the other in tourism. For this family, the life trajectories of the two generations have already diverged sharply: the mother's livelihood remains primarily dependent on livestock production, while the daughters now work in non-agricultural sectors in the county seat, earning relatively stable wages and gaining access to urban amenities.

This case illustrates a form of generational differentiation unfolding within the broader transformation of pastoral societies. The development of education, transportation, and county-level industries has enabled some young women to leave pastures and take up non-agricultural employment, expanding their range of choices regarding occupation and lifestyle. Yet this migration does not mean that the pastoral and domestic labor once performed by these women has simply disappeared. After young family members leave, the tasks that must be carried out continuously, such as milking, dairy processing, housework, and caregiving, remain. The question of who continues to shoulder this labor thus becomes essential to understanding this transformation.

Overall, progress in primary healthcare, maternal care, commodity distribution, housing conditions, and county-level non-agricultural employment has brought new resources and choices to women in pastoral areas. From "camel hospitals" to a combination of fixed medical stations and mobile outreach services, from giving birth in yurts to delivering at county-level hospitals, from improved hygiene products and living amenities to county-seat employment, the living conditions and mobility space of women pastoralists are undergoing significant transformation.

However, more resources and opportunities do not automatically translate into fewer existing labor and caregiving responsibilities. On the contrary, when family members' occupations, places of residence, and lifestyles change, the existing tasks of livestock raising, housework, and caregiving may be redistributed among different family members. The next section will further discuss how, following the introduction of these new resources, labor, caregiving responsibilities, and bodily costs are reconfigured among women occupying different generational and occupational positions.

3. After Resource Expansion: Reconfiguration of Labor, Caregiving Responsibilities, and Bodily Costs

3.1 Generational Division of Labor Following Non-agricultural Employment

County-level non-agricultural employment offers some young women in pastoral areas the opportunity to leave and work in urban areas. However, existing pastoral and domestic labor within the household does not automatically decrease as a result. Previous studies have shown that, during the ongoing transfer of China's rural labor force to non-agricultural sectors, younger workers are more likely to exit agriculture, while older family members are more likely to remain engaged in agricultural production for extended periods. This will thus lead to intra-household reallocation of labor across generations [17].

This generational disparity is embodied by the elderly lady at the Tolehaite mountainside pasture. Field observations revealed that, with both of her daughters working away in the county seat, she rises at approximately 6:00 AM each day to milk four cows, then prepares breakfast for the entire family and participates in sheep herding. In the afternoon, she must milk the cows again and complete other household chores and livestock-related tasks, typically finishing her day's work around 10:30 PM. Only on rainy days, when certain outdoor tasks cannot be performed, does she get more rest.

This family case illustrates that when the younger generation gains new opportunities for occupational and spatial mobility, the labor required to sustain a pastoral household does not correspondingly diminish. As younger family members gradually find work at the county seat, elderly women who remain in pastures may continue to bear the burden of milking, dairy processing, housework, and other productive tasks. What merits attention here is not simply how the migration of young women has led to an increased burden on elderly

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women, but rather how, once family members' livelihood pathways diverge, existing labor is reallocated within the household, and how this reallocation becomes concentrated on women of different generations.

3.2 Tensions Between Professional Institutions and Caregiving Responsibilities: Work-family Conflict Facing Female Primary Healthcare Workers

A similar reconfiguration of labor also occurs within the primary healthcare system itself. The expansion of medical services in pastoral areas depends on the continuous labor input of grassroots medical workers, including doctors and nurses. However, professional requirements, including fixed shifts, night shifts, and mountain outreach visits, may conflict with family caregiving responsibilities. Research on work-family conflict among health workers in China has shown that factors such as night shift frequency and childcare pressure significantly increase the difficulty for nurses in balancing professional and family obligations [18].

During an interview, a female chief physician at a township health center repeatedly mentioned the conflict between night shifts and childcare: "I have to work night shifts, but there's no one to look after my child at night." She observed that her female colleagues with young children also faced similar problems. They had raised childcare difficulties at staff meetings, hoping for some kind of external support, but were told that no such policies were in place yet. She also noted that even women in management positions had to juggle work and childcare on their own.

This case shows that expanding primary healthcare services is not just about bringing medical resources into pastoral areas; it also requires medical workers to adapt to fixed schedules, night shifts, and broader service scopes. For female healthcare workers with younger children to take care of, this can create significant conflicts between institutional demands and family obligations. Without adequate public support such as childcare services, these conflicts often fall to the household or other private resources to resolve.

These two cases—one situated in a pastoral household and the other in a grassroots medical institution—reveal similar structural issues. Though new employment opportunities and public services expand women's social spaces, existing productive, domestic, and caregiving responsibilities do not disappear synchronously. Without adequate family and public support, such persistent labor needs to be taken up by someone else, thereby potentially generating new generational and occupational disparities.

4. Caregiving Practices and Bodily Adaptation Under Structural Constraints

4.1 Piecing Together Caregiving Resources: Grandparental Support and Paid Childcare

Rather than passively accepting the pressures of fixed schedules, night shifts, and childcare responsibilities, female primary healthcare workers reorganize daily caregiving through family members and paid services. Household studies in China have noted that grandparental care can support mothers' continued employment and is associated with higher labor force participation among Chinese mothers [19, 20]. In the present study, the use of paid childcare is documented through interview material discussed below.

A female chief physician at a township health center described how her childcare arrangements evolved: "My mother-in-law and my own mother helped take care of my first child, and I also pitched in whenever I could; for my second child, I hired a babysitter." Since her job requires rotating night shifts, she cannot care for her younger child at night and therefore employs a dedicated babysitter. According to her, several of her female colleagues do the same. Babysitters focus solely on childcare and do not take on other household tasks, at a monthly cost of approximately 3,000 yuan. In this way, grandparental support and paid childcare together form the caregiving network that enables her to sustain her career.

This arrangement, however, does not mean that the tension between work and family has been resolved. As noted earlier, she and her colleagues had raised childcare difficulties at staff meetings but were told that no such policies were yet in place. In the absence of public childcare support, it falls largely to parents and their families to figure out how to balance work and childcare. She also mentioned that some colleagues had changed their childbearing plans after weighing practical factors such as work and childcare; one colleague ultimately chose to terminate a third pregnancy. While it would be too simplistic to attribute individual reproductive decisions solely to occupational pressure, this account at least indicates that work arrangements and caregiving conditions have become part of women's practical calculus around having children.

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Compared to household production, where work and living spaces overlap considerably, the hospital's fixed workplace, night shifts, and scheduling system impose clearer boundaries on labor time. When professional labor and childcare cannot be carried out simultaneously, women must continuously mobilize different resources, such as grandparents and babysitters, to fill caregiving gaps. Therefore, grandparental support and paid childcare are less a stable solution than a pragmatic combination formed by female primary healthcare workers navigating between professional demands and parenting responsibilities.

4.2 Between Pain and Labor: The Treatment and Continued Use of the Body

If the challenge for female healthcare workers is how to reorganize caregiving, then for women engaged in long-term livestock management, the issue is how to sustain a body capable of continuous labor. With modern medical resources now available in pastoral areas, new avenues for treating pain and strain have emerged. But an increased supply of medical services does not mean that the labor conditions causing that strain have also disappeared.

Dr. Murat from the mobile clinic observed in his long-term clinical practice that some women pastoralists show clear signs of lower back and joint injuries. He noted that prolonged squatting while milking and sustained heavy physical labor can damage the lower back, with some severe cases even experiencing difficulty walking. While pastoral data alone cannot establish medical causality, occupational health studies on dairy farming in other regions have similarly found that work-related factors, such as repetitive movements, poor posture, and heavy lifting, are linked to higher rates of musculoskeletal discomfort among dairy farmers, especially in the lower back, shoulders, and wrists, with female workers reporting certain types of discomfort at higher rates than males [21].

At the Tolehaite summer pasture, milking, dairy processing, housework, and other livestock-related tasks make up the daily bodily labor of many women. When they experience lower back pain, some visit the mobile clinic for treatments like physiotherapy to ease their discomfort. What stands out is not just that medical resources have become more accessible, but how women fit medical care into their working lives: treatment often takes place in the gaps between ongoing productive labor, and once they recover to a certain degree, they still need to return to the same tasks as before.

Beyond seeking medical care, women also draw on accumulated life experience to manage everyday pain. Sixty-eight-year-old Granny Gulnur, who has long lived in the summer pasture, suffers from knee pain. She attributes it to cold exposure and aging. When the pain flares up, she uses self-care methods such as massage and keeping warm to relieve it. Rather than framing these practices as a fully formed system of "indigenous medical knowledge," it is more accurate to see them as everyday bodily experience built up through years of life and labor. As medical anthropological research emphasizes, people's responses to illness and physical discomfort do not simply follow fixed medical rules; instead, they continually invoke and combine different forms of knowledge and practice within specific life circumstances [5, 6].

Thus, in the contexts observed in this study, modern medicine and everyday bodily experience do not operate as two mutually exclusive systems. A woman might visit the mobile clinic for physiotherapy while also managing pain through self-massage and keeping warm. What has truly remained fundamentally unchanged is the labor itself that produces bodily strain. Once her symptoms are somewhat relieved, she typically must return to milking, housework, and other pastoral tasks, thus forming a recurring cycle of "strain—treatment and adaptation—continued labor."

This cycle suggests that an increased supply of medical resources is not the same as a reduction in bodily burden. Without significant changes to the existing division of labor, medical care, family experience, and market resources serve primarily to help women keep daily life and production running. Women thus demonstrate considerable practical adaptability. Yet these individual-level strategies for managing the body and organizing care cannot, on their own, transform the labor structures that generate caregiving pressures and physical strain.

5. Conclusion

Drawing on fieldwork conducted in Burqin County and the Tolehaite summer pasture in Xinjiang, this paper examines how, after resources such as healthcare services, infrastructure, and non-agricultural

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employment opportunities are introduced into pastoral areas, women in different positions gain new opportunities while continuing to bear persistent labor, caregiving, and bodily costs. The study finds that pastoral social transformation does not benefit all women equally. More medical services, maternal health protection, daily commodities, and employment opportunities have expanded the range of choices for some women, but existing production and caregiving responsibilities have not disappeared in tandem.

This asynchronous change produces a new configuration of labor and responsibility among women. Some young women find non-agricultural work in the county seat, while the milking, dairy processing, and housework required to keep pastoral households running persist, and may become increasingly concentrated among older women who remain in the pastures. Meanwhile, as primary healthcare services continue to extend into pastoral areas, female health workers, bound by fixed schedules and night shifts, still rely on grandparental and paid care to reconcile childcare with their careers. While modern medicine offers new treatment options for the pain and injury caused by long-term pastoral labor, with labor conditions largely unchanged, treatment more often helps women recover and return to production than fundamentally remove the bodily burden itself.

In this sense, the "unintended outcomes" discussed in this paper do not mean that modernization simply produces negative results, but rather that resources, opportunities, and responsibilities do not change at the same speed or in the same manner. As research on the unintended consequences of social interventions suggests, once institutions and resources enter a specific society, their actual effects depend on existing family relations, divisions of labor, and local patterns of daily life [10]. In the cases examined here, women continually piece together pragmatic solutions, through grandparental support, paid childcare, modern medicine, and everyday bodily experience, to sustain work, family, and livelihood. These practices reflect women's active adaptation to social change, but individual-level resource combinations do not automatically transform the existing gender-based division of labor.

Therefore, understanding pastoral social transformation requires more than measuring how much medical care, infrastructure, or employment has increased. It demands answers to the following questions: Who gains access to the new opportunities? To whom has the existing labor shifted? How are the added costs of time, caregiving, and bodily wear distributed within families and across generations? Rather than simply judging whether modernization has "improved" or "worsened" women's lives, examining how labor and responsibility are reorganized after the expansion of resources offers a more useful lens for grasping the everyday complexity of pastoral social transformation.

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