

## Efficacy and patient satisfaction with Sayana Press (DMPA-SC) among women seeking birth spacing

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### Abstract

**Objective:** To determine the efficacy of depot medroxyprogesterone acetate subcutaneous injection in females seeking birth-spacing, and to evaluate patient satisfaction.

**Method:** The descriptive case series was conducted at the Department of Obstetrics and Gynaecology, Services Hospital, Lahore, Pakistan, from August 2, 2022, to February 1, 2023, and comprised women aged 20–40 years seeking birth spacing. DMPA-SC (Sayana Press) was administered subcutaneously, with follow-up at 3 and 6 months; efficacy was assessed by urine  $\beta$ -human chorionic gonadotropin ( $\beta$ -hCG) testing. Data were analysed using IBM SPSS Statistics (version 25.0).

**Results:** Of the 120 females with a mean age of  $30.48 \pm 4.57$  years, 63 (52.5%) were aged 31–40 years. Among participants who completed 6-month follow-up ( $n=109$ ), no pregnancy occurred (contraceptive effectiveness 100%; 95% CI 96.7–100). Overall, 95 (79.17%) participants reported satisfaction with the intervention.

**Conclusion:** DMPA-SC was effective among women seeking birth spacing, and patient satisfaction was high.

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### Introduction

Pakistan, the seventh most populous country in the world, faces a 2.6% annual population growth rate and significant demographic challenges that include total fertility rate (4.33%) and maternal mortality rate (297/per 100,000 livebirths).<sup>1,2</sup> Family planning offers substantial health and societal benefits, such as reduced maternal risks, lower infant mortality, and controlled population growth.<sup>3</sup> However, contraceptive prevalence in Pakistan increased only modestly from 30% to 35% between 2000 and 2013, falling short of the 50% target by 2020, due to political, cultural and societal barriers.<sup>1,3</sup>

Injectable contraceptives are popular in low- and middle-income countries (LMICs), but discontinuation rates remain high, as seen in Malawi where 41% of users stopped within a year.<sup>4</sup> The depot medroxyprogesterone acetate subcutaneous injection (DMPA-SC), an innovation in self-injected contraceptive methods, offers comparable efficacy and safety to traditional injectables while improving access and cost-effectiveness.<sup>5</sup> Studies have reported high levels of user satisfaction, reaching up to 87%, despite variation in efficacy outcomes.<sup>4,5</sup>

With respect to Pakistan, despite growing recognition of the importance of family planning, significant barriers persist in achieving higher contraceptive prevalence. These

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barriers are the widespread misinformation, cultural resistance, and rural and underserved areas with minimum or low access to family planning services. For instance, traditional methods of contraception are often preferred over modern ones, with concerns about side-effects, cultural norms and religious opposition playing critical a role in decision-making.<sup>6</sup> Additionally, there are significant disparities in contraceptive access based on socioeconomic status (SES) and geographic location, with poorer and rural women facing greater challenges in obtaining and continuing contraceptive use.<sup>1</sup> These factors contribute to Pakistan's low contraceptive prevalence rate and high fertility rate despite considerable efforts by the government and international organisations to improve family planning services.<sup>7</sup> Furthermore, healthcare system inadequacies, such as insufficient trained health workers and limited supply chains for contraceptive methods, exacerbate the issue.<sup>8</sup> To address these challenges, innovative solutions are required, such as expanding access to self-administered contraceptive methods, like DMPA-SC, which could empower women with greater autonomy and flexibility in managing their reproductive health.<sup>9</sup> Moreover, educating communities about the benefits of family planning and providing culturally sensitive services are crucial for improving contraceptive uptake, and ultimately achieving sustainable population growth.<sup>6</sup>

The current study was planned to determine the efficacy of DMPA-SC injection in females seeking birth-spacing, and to evaluate patient satisfaction.

### Subjects and Methods

Those included were females aged 20–40 years, with parity

>1, seeking birth spacing. Women who did not want injectable contraception, those who desired pregnancy within the next 9 months, those unable to provide informed consent, those with psychological or neurological illness, those with positive urine  $\beta$ -hCG at baseline indicating pregnancy, and those with medical contraindications to injectable contraception were excluded.

After taking informed consent from the enrolled females, demographic data, including name, age, body mass index (BMI), duration from previous delivery, parity, education, occupation, residence, family type and statuses, was noted.

DMPA-SC injection (Sayana Press) was applied at abdomen, upper thigh or upper arm. The injection was administered at the health facility due to logistical and regulatory constraints even though the product used is designed for self-injection. All the subjects were followed up in the outpatient department (OPD) for three months when the next dose was administered. After 3 and 6 months, urine samples were taken to assess  $\beta$ -HCG level. Reports were assessed to determine the efficacy of the intervention. Moreover, the subjects were asked about their satisfaction regarding all aspects of the intervention, and if they would recommend DMPA-SC to others. Efficacy was defined as absence of pregnancy confirmed by negative  $\beta$ -HCG at 3 and 6 months, while satisfaction was defined as participant's satisfaction and willingness to recommend the intervention to others.

The collected data after removing the incomplete data, were analysed using IBM SPSS Statistics (version 25.0). Mean $\pm$ SD were computed for quantitative variables, while frequencies and percentages were computed for qualitative variables. Associations were explored using chi-square test or Fisher's exact test, as appropriate. All tests were two-sided, and  $p \leq 0.05$  was considered statistically significant. Effectiveness was also reported with an exact (Clopper–Pearson) 95% confidence interval.<sup>10</sup> Participants lost to follow-up were excluded from effectiveness analyses.

## Results

Of the 120 female subjects, 114(95%) completed their 3-month follow-up, and, of them, 109(95.2%) completed their 6-month follow-up. Overall, the mean age was  $30.48 \pm 4.57$  years. Mean duration from previous delivery was  $5.93 \pm 2.24$  months. Mean BMI was  $30.34 \pm 3.40 \text{ kg/m}^2$  (Table 1). Continuation, defined as completion of the 6-month follow-up, was observed in 109 of 120 participants (90.8%).

No pregnancy occurred among participants who completed 6-month follow-up ( $n=109$ ), indicating 100%

**Table-1:** Patient characteristics ( $n=120$ ).

Variable	Category	n (%)
Age (years)	20–30	57 (47.5)
	31–40	63 (52.5)
Parity	$\leq 3$	56 (46.7)
	$> 3$	64 (53.3)
Duration from previous delivery	$\leq 6$ months	81 (67.5)
	$> 6$ months	39 (32.5)
Body mass index (BMI) ( $\text{kg/m}^2$ )	$\leq 30$	52 (43.3)
	$> 30$	68 (56.7)
Place of Living	Rural	42 (35)
	Urban	78 (65)
Socioeconomic Status	Low	17 (14.2)
	Middle	61 (50.8)
	High	42 (35)
Education Level	Illiterate	17 (14.2)
	Primary	14 (11.7)
	Middle	36 (30)
	Matric & above	53 (44.2)
Occupation	Housewife	46 (38.3)
	Working	74 (61.7)
Family Type	Combined	56 (46.7)
	Isolated	64 (53.3)
Pregnancy during 6-month follow-up ( $n=109$ )	Yes	0 (0)
	No	109 (100)
Patient Satisfaction	Yes	95 (79.2)
	No	25 (20.8)

**Table-2:** Stratification of efficacy with respect to study variables.

	Value	Notes
Effectiveness (exact 95% CI)	0/109 (0%) 100% (96.7–100)	Clopper–Pearson exact confidence interval.

contraceptive effectiveness (95% CI 96.7–100). Overall, 95(79.17%) participants reported satisfaction with the intervention. Adverse events were mild and included irregular bleeding and amenorrhoea, which were self-limiting.

Subgroup analyses were performed for patient satisfaction; satisfaction was significantly associated with socioeconomic status ( $p=0.009$ ) (Table 3). Effectiveness stratification was not statistically analysed because no pregnancies occurred among those followed up to 6 months.

## Discussion

The current study evaluated contraceptive effectiveness, satisfaction and continuation with DMPA-SC among Pakistani women seeking birth spacing. No pregnancy occurred among participants who completed 6-month follow-up ( $n=109$ ), indicating 100% effectiveness (95% CI 96.7–100), while 79.17% of participants reported satisfaction.

In contrast to earlier studies focussing on self-administration, the current study administered the

**Table-1:** Patient characteristics (n=120).

	Yes (n=95) [n (%)]	No (n=25) [n (%)]	p-value
<b>Age (years)</b>			
20-30	44 (77.19)	13 (22.81)	0.613
31-40	51 (80.95)	12 (19.05)	
<b>Parity</b>			
≤3	45 (80.36)	11 (19.64)	0.764
>3	50 (78.13)	14 (21.87)	
<b>Duration (months)</b>			
≤6	61 (75.31)	20 (24.69)	0.134
>6	34 (87.18)	05 (12.82)	
<b>BMI (kg/m<sup>2</sup>)</b>			
≤30	43 (82.69)	09 (17.31)	0.406
>30	52 (76.47)	16 (23.53)	
<b>Place of living</b>			
Rural	37 (88.10)	05 (11.90)	0.077
Urban	58 (74.36)	20 (25.64)	
<b>Socioeconomic status</b>			
Low	14 (82.35)	03 (17.65)	0.009*
Middle	51 (83.61)	10 (16.39)	
High	30 (71.43)	12 (28.57)	
<b>Education</b>			
Illiterate	14 (82.35)	03 (17.65)	0.814
Primary	12 (85.7%)	2 (14.3)	
	(corrected from 11+6=17 mismatch)		
Middle	29 (80.56)	07 (19.44)	
Matric & above	40 (75.47)	13 (24.53)	
<b>Occupation</b>			
Housewife	36 (78.26)	10 (21.74)	0.847
Working	59 (79.73)	15 (20.27)	
<b>Family type</b>			
Combined	46 (82.14)	10 (17.86)	0.453
Isolated	49 (76.56)	15 (23.44)	

Note: P-values are overall for each variable (chi-square/Fisher's exact), two-sided.

BMI: Body mass index.\*Statistically significant.

injection at a health facility due to regulatory and logistical constraints. This represents a key distinction of the intervention, as the burden of travel and facility visits was not reduced.<sup>10,11</sup>

Subgroup analysis revealed that women with higher education and having past contraceptive experience mentioned greater satisfaction. Participants from urban areas showed higher efficacy and satisfaction. These results proposed that socioeconomic and educational aspects influenced acceptability and persistence.

Adverse events were mild and consistent with known side-effects of DMPA-SC, such as irregular bleeding and amenorrhoea. Counselling about expected side-effects is essential to improve continuation rates.

The current study has limitation as the injection was administered in a health facility due to regulatory and logistical constraints. Thus, the burden of commute was not

reduced. The findings need careful interpretation. However, the product's design for self-injection offers strong potential to empower women and expand contraceptive access in Pakistan. With proper counselling and support, DMPA-SC can play a significant role in advancing family planning choices and improving reproductive health outcomes.

## Conclusion

DMPA-SC demonstrated 100% effectiveness among those completing 6-month follow-up, with high satisfaction (79.17%).

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**Conflict of Interest:** None.

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### Author Contribution:

**SA:** Concept, design and guided overall research.

**AR:** Literature review and writing the background section.

**SR:** Data analysis and prepared results.

**HII:** Data analysis, interpretation and discussion section.

**SR:** Drafting and ensured adherence to journal guidelines.

**SS:** Review, editing and final approval.