

PRENATAL MOBILE SELF-OPERATED HOME ULTRASOUND SERVICE IMPACT ON HEALTH CARE RESOURCES UTILIZATION

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SMFM 43rd Annual Pregnancy Meeting

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OBJECTIVE

Mobile medical devices for self-patient use are rapidly evolving. A leading HMO (Clalit Health Services, Israel) launched a home-ultrasound (Pulsenmore Ltd.) service enabling a basic sonographic assessment interpreted by a clinician via asynchronous teleconsultation. We aimed to examine whether the use of the device and its adjunct medical service can provide financial benefits for both patients and the healthcare system.

Design

Retrospective cohort between 2021 and 2023, comparing 4,460 women using Clalit's home ultrasound service with a control group of 102,707 women with an equal HMO status, who did not obtain this service. Demographic characteristics, number (N^o) of emergency room (ER) visits, N^o of hospitalizations, N^o of hospital stay days and N^o of OBGYN primary caregiver visits were compared between the groups as well as composite outcome of these variables.

RESULTS

Women in the study group were older, more likely primiparous, had higher incidence of chronic illness, more often considered to be at high-risk pregnancy and had higher socio-economic score in comparison to controls (Table 1).

Univariate analysis demonstrated lower rates of ER visits, hospitalizations and in-hospital days in favor of the study group ($p < 0.0001$). N^o of OBGYN primary caregiver visits were higher among the study group ($p < 0.0001$), however it embodies administrative and phone call appointments, making it difficult to estimate the exact in-person visits. Furthermore, higher rates of chronic illnesses and high-risk pregnancies likely requires closer surveillance.

In a multivariate analysis for age, BMI, parity, socioeconomic score, and chronic illness the calculated adjusted value of ER visits, N^o of hospitalization, N^o of in-hospital days and a composite score of ER visits and in-hospital days were all lower in the study group compared to controls (2.24 vs 2.38, $p = 0.0268$; 0.34 vs 1.53, $p < 0.0001$; 0.95 vs 4.75, $p < 0.0001$ and 3.17 vs 7.6, $p < 0.0001$).

CONCLUSION

Prenatal mobile self-operated home ultrasound service may ease the burden of healthcare resource utilization, mainly emergency visit and in-hospital stay.

Key words: ultrasound, telemedicine, fetal monitoring, mobile, self-operated

PRENATAL MOBILE SELF-OPERATED HOME ULTRASOUND SERVICE IMPACT ON BIRTH OUTCOMES

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TABLE 1: BASELINE CHARACTERISTICS AND USE OF HEALTH CARE RESOURCES, STRATIFIED ACCORDING TO PRENATAL UTILIZATION OF HOME ULTRASOUND SERVICE

Variable	N All	Control n=102,707	Study n=4460
Maternal Age, years	107,167	32.0±5.4	32.5±4.9
Body Mass Index, Kg/m2	45,146	24.6±4.9	24.5±4.9
Primiparous	107,167	4643 (4.52%)	522 (11.7%)
Chronic Disease*	107,167	48167 (46.9%)	2579 (57.83%)
Socioeconomic Score (1-20)	107,167	4.9±2.6	6.0±2.5
High Risk Pregnancy **	107,167	4683 (4.56%)	341 (7.65%)
Nº of Emergency Room Visits	64,692	2.3±1.7	2.2±2.4
Nº of Hospitalizations	20,155	1.4±1.0	0.4±0.9

Data presented as frequency, n (%) for categorial variables and mean±standart deviation (SD) for continuous variables

#Data for BMI was derived from 45,146 women from the entire cohort.

*Chronic Disease- Asthma, Thrombophilia, Inflammatory Bowel Disease, Chronic Hypertension, Diabetes Mellitus, Thyroid Disorders, Lupus

**includes: hypertensive disorders in pregnancy, gestational diabetes, amniotic fluid volume disorders and placental abruption