Holistic primary health care for patients with multimorbidity: impact on treatment burden, quality of life and urban–rural inequalities

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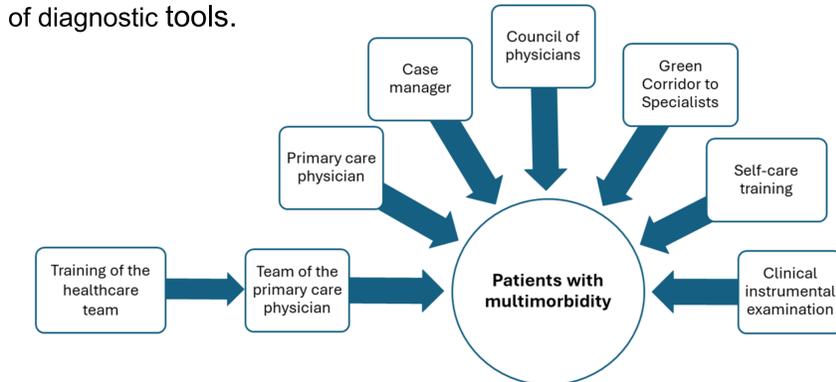[2] Department of Chemistry, The University of Chicago, 5735 S Ellis Avenue, Chicago, IL. 60637, USA

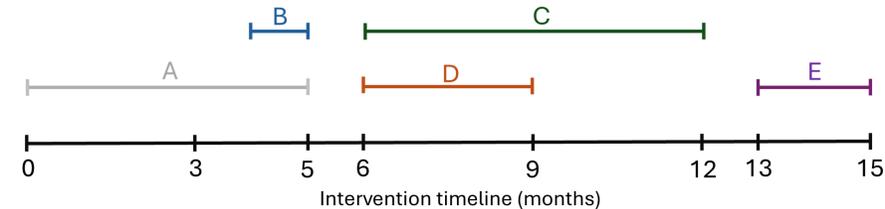*Corresponding author email: olga.vasiliauskiene@lsmu.lt

Background

Multimorbidity and the associated treatment burden are a growing challenge for primary health care (PHC). Patients with multiple chronic conditions frequently experience fragmented care, high self-management demands, and poorer health-related quality of life (HRQoL), particularly in rural and socially deprived areas. This study assessed the impact of a holistic care model for patients with multimorbidity in PHC in Lithuania on treatment burden, HRQoL, and mental health, and explored urban–rural differences.

Model

1. Expanded multidisciplinary primary care team (family physician, nurse, social worker, endocrine nurse, psychologist), additionally supported by a case manager, lifestyle specialist, and physiotherapist.
2. Case management and holistic patient assessment conducted by a nurse or advanced practice nurse, including symptom and functional assessment, treatment burden and HRQoL assessment, mental health screening, risk factor assessment, and care-plan development.
3. Case conferences ("counsel") and a fast-track referral pathway ("green corridor") to improve timely access to specialists when needed.
4. Specialist consultations (in-person and remote/hybrid depending on specialty).
5. Patient self-management education delivered at primary care centres.
6. Expanded diagnostics in primary care, supported by staff training (e.g., Holter monitoring, 24-h blood pressure monitoring, ankle–brachial index, microfilament testing for diabetes complications).
7. Team training (4–6 targeted sessions) covering multimorbidity management, holistic care principles, interdisciplinary collaboration, and use of diagnostic tools.

Over 15 months, the intervention group received care based on a predefined holistic care plan, while the control group continued usual care provided by their family physician. The intervention included holistic health assessment and individualized care planning by the case manager and family physician (months 1–5, A), multidisciplinary primary care review (months 4–5, B), implementation of the care plan (months 6–12, C), additional individualized expedited investigations when needed (months 6–9, D), and final evaluation of care plan implementation (months 13–15, E).
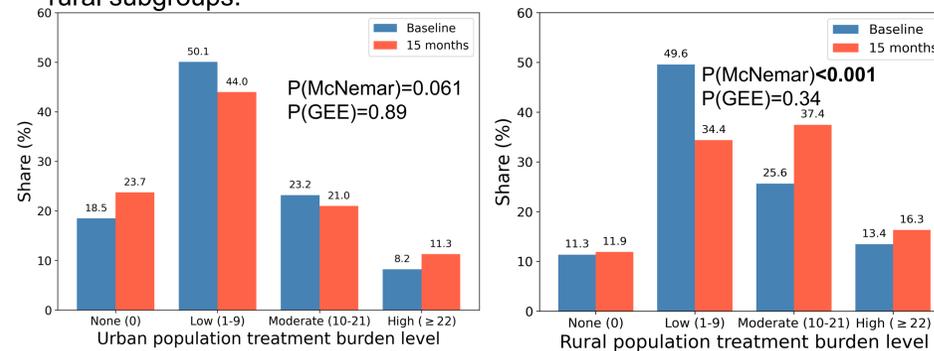

Methods

We conducted a 15-month pragmatic controlled trial in urban and rural PHC centres (n = 796 enrolled) as part of the EUFIAP "TELELISPA" project. Adults aged 40–85 years with ≥2 chronic conditions were allocated to usual care or to a complex intervention that included case management, multidisciplinary team support (family physician, nurse, psychologist, physiotherapist, lifestyle specialist), structured use of patient-reported outcome measures (PROMs), and proactive follow-up. Data were analyzed using multivariable models and pre-specified subgroup analyses by age, multimorbidity level, polypharmacy, and place of residence.

Results

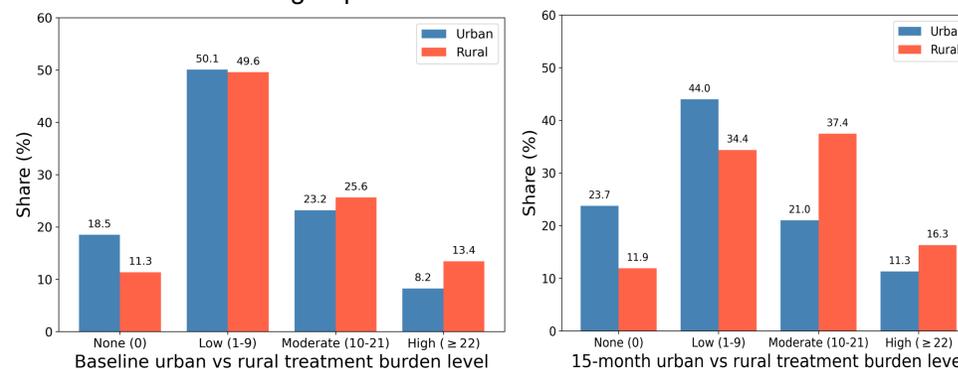### Intervention effects on treatment burden

At 15 months, the proportion of participants with low treatment burden (MTBQ 1–9) decreased from 46.6% to 38.5%, whereas the proportion with high treatment burden (MTBQ ≥22) increased from 9.0% to 12.0%. In contrast, the proportions reporting no treatment burden (19.4% vs 18.9%) and moderate treatment burden (25.0% vs 24.5%) remained largely unchanged. Overall, these findings suggest a shift in the distribution of treatment burden from low towards high burden over time.

Chart 1. Distribution of treatment burden severity categories (none, low, medium, and high) before and after the 15-month intervention in urban and rural subgroups.

After 15 months, treatment burden increased in both subgroups, but the shift was more pronounced in rural participants. In the urban subgroup, the proportion with low burden decreased (50.5% to 44.0%), while high burden nearly doubled (6.0% to 11.3%); the no-burden and moderate-burden categories changed little. In the rural subgroup, low burden decreased markedly (49.2% to 34.4%), whereas both moderate burden (25.4% to 37.4%) and high burden (13.3% to 16.3%) increased, indicating a clearer shift towards greater treatment burden. Urban–rural differences were significant both at baseline and after 15 months, with rural participants more frequently represented in higher burden categories.

Chart 2. Distribution of treatment burden severity categories (none, low, medium, and high) before and after the 15-month intervention between the urban and rural subgroups.

Intervention effects on quality of life, anxiety and depression

The intervention group demonstrated significantly better health-related quality of life compared with the control group. The median EQ-5D-5L index score was higher in the intervention group than in the control group (0.767 vs 0.739; r = 0.195; p = 0.020), and the EQ-VAS self-rated health score was also higher (70 vs 60; r = 0.234; p = 0.012). In the EQ-5D-5L dimensions lower anxiety/depression scores (median 1 vs 2; r = 0.150; p = 0.044) compared with the control group.

Table 1. Median assessment of quality of life (EQ-5D-5L) and mental health (anxiety and depression) symptoms between the intervention and control groups after 15 months of intervention.

	Control group median (IQR)	Intervention group median (IQR)	Mann-Whitney U test p-value
EQ-5D-5L index	0.739 (0.19); n=357	0.767 (0.18); n=378	p=0.020
EQ-VAS score	60.0 (25.0); n=358	70.0 (30.0); n=381	p=0.012
GAD-7 score	3.0 (5.0); n=360	2.0 (4.0); n=377	p=0.002
PHQ-9 score	4.0 (4.0); n=360	2.0 (4.0); n=374	p<0.001

Subgroup analysis showed that the intervention was most beneficial in younger patients, those with higher education, and those with polypharmacy. Younger participants showed greater improvement in general health and larger reductions in anxiety and depressive symptoms. Patients with higher education and those receiving ≥5 medications demonstrated a stronger reduction in depressive symptoms, while patients with more chronic conditions showed more pronounced improvement in psychoemotional outcomes, particularly anxiety/depression.

Table 2. Statistically significant differences in the distribution of quality of life and mental health symptom (anxiety and depression) indicators between the control and intervention groups, as well as across subgroups defined by age, education, number of chronic conditions, and number of medications used.

Questionnaires	Age, years		Education, years		Number of chronic conditions		Number of medications	
	<65	≥65	≥14	<14	≤5	>5	<5	≥5
EQ-5D-5L								
EQ-5D-5L anxiety/depression	–	–	–	–	-0.06	-0.22	0.02	-0.19
GAD-7 score	-1.68	-0.05	–	–	–	–	–	–
PHQ-9 score	-1.72	-0.27	-1.45	0.19	–	–	-0.10	-1.47

Conclusion

A holistic care model in PHC can improve quality of life and mental health in multimorbid patients with complex needs but may simultaneously shift or increase treatment burden in contexts with persistent access barriers. To avoid overloading vulnerable groups, integrated care should reduce logistical barriers and be tailored to patients' capacity, particularly in rural and socially deprived areas.