University of Basel
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BRIGHT Study
Building Research Initiative Group: Chronic Illness Management and Adherence in Transplantation

Pflegewissenschaft
Nursing Science

Building Research Initiative Group: Chronic Illness Management and adHerence in Transplantation study

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Background

- **Non-adherence** (NA) to the treatment regimen after heart transplantation (HTx) **is high among heart transplant patients** and frequently **related to poor clinical and economic outcomes**.
- **Limited data** are available **about the prevalence of NA to the treatment regimen** across different countries/healthcare systems.
- A **few studies** exist that focus **on healthcare system factors** to explain adherence to immunosuppressive medication in transplant patients.

Objectives

1. To **describe CIM practice patterns** among centers, countries, and continents **in HTx**
2. To **assess the prevalence and variability of non-adherence to treatment regimen** among centers, countries, and continents
3. To **determine which multi-level factors are related to immunosuppressive medication adherence**
4. To **benchmark the participating centers, countries and continents** in relation to **CIM practice patterns and non-adherence** to treatment regimen

Methods

Design

- International, multi-center, cross-sectional study

Sample & setting

- A convenience sample of heart transplant centers in Australia, Europe, North America, and South America
- A proportionate random sample of patients within the centers: small center: N= 25, medium center: N= 40, large center: N= 60
- Randomized sampling of transplant clinicians if >5 within center (maximum of 5 nurses included per center)
- Final sample: 1397 HTx recipients from 36 HTx centers in 11 countries

Variables and measurements: select variables at the:

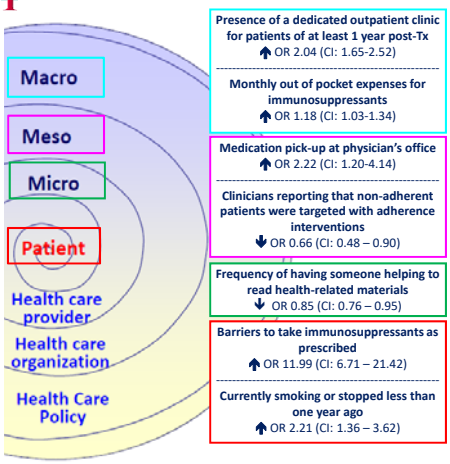
1. Patient level
2. Micro level (patient-provider interaction)
3. Meso level (transplant center)
4. Macro level (Healthcare system)

Data analysis

- **Data description**: measures of central tendency, dispersion, and frequency distributions are employed depending on the measurement level of each variable.
- **Psychometrics**: Multi-item instruments are checked for dimensions before use in further analyses.
- **Inferential statistics**: multi-level correlates of non-adherence will be examined using mixed-effects regression analysis, using center as a random variable. A separate model will be used to test the patient-level variables outlined in the IMBP.
- **Benchmarking**: each transplant center received feedback on their performance using results benchmarked on system factors against the mean of all transplant centers.

Selected results

1



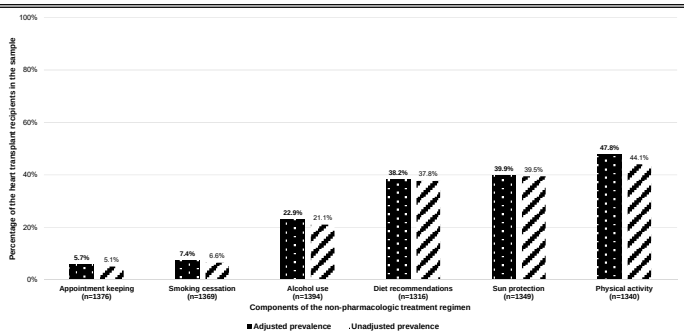
Guided by the Integrative Model of Behavioral Prediction and Bronfenbrenner's ecological model, we analyzed factors at these multiple levels using sequential logistic regression analysis (6 blocks).
The nonadherence prevalence was 34.1%. Six multilevel factors were associated (either positively or negatively) with nonadherence: **patient level**: barriers to taking immunosuppressants (odds ratio [OR]: 11.48); smoking (OR: 2.19); **family/healthcare provider level**: frequency of having someone to help patients read health-related materials (OR: 0.85); **organization level**: clinicians reporting nonadherent patients were targeted with adherence interventions (OR: 0.66); pickup of medications at physician's office (OR: 2.31); and **policy level**: monthly out-of-pocket medication costs (OR: 1.16).
Factors associated with nonadherence are evident at multiple levels. Improving medication nonadherence requires addressing not only the patient, but also family/healthcare provider, organization, and policy levels.

2

We assessed the prevalence of medication non-adherence (MNA) (implementation and persistence) to immunosuppressants and co-medications in heart transplant (HTx) recipients using BAASIS® (self-report) and compared prevalence estimates in both categories of medication using logistic regression.
MNA was present in both categories of medication and significantly (α=0.05) higher regarding co-medications than immunosuppressants (implementation: taking 23.9% vs. 17.3% (OR=1.5, CI: 1.30-1.73), drug holiday 5.7% vs. 1.9% (OR=3.17, CI: 2.13-4.73), dose alteration 3.8% vs 1.6% (OR=2.46, CI: 1.49-4.06) and discontinuation: 2.6% vs. 0.5% (OR=5.15, CI: 2.36-11.20)).
Given this prevalent MNA to all post-HTx medication, adherence-enhancing interventions need to focus on the entire medication regimen.

3

Figure: The adjusted and unadjusted overall prevalence of non-adherence to the non-pharmacologic treatment regimen



We used self-report data of adult HTx recipients to assess non-adherence to the post-HTx non-pharmacologic treatment. The non-adherence definitions used were: Physical activity: <3 times/week 20 minutes' vigorous activity, <5 times/week 30 minutes' moderate activity, or <5 times/week a combination of either intensity; Sun protection: not "always" applying any sun protection; Diet: not "often" or "always" following recommended diet(s); Alcohol use: > 1 alcoholic drink/day (women) or > 2 drinks/day (men); Smoking: current smokers or stopped <1 year before; Follow-up visits: missing ≥1 of the last 5 outpatient follow-up visits. Overall prevalence figures were adjusted to avoid over- or underrepresentation of countries. Between-country variability was assessed within each treatment component via chi-square testing.
The adjusted study-wide non-adherence prevalence figures were: 47.8% for physical activity (95% CI [45.2-50.5%]), 39.9% for sun protection (95% CI [37.3-42.5%]), 38.2% for diet recommendations (95% CI [35.1-41.3%]), 22.9% for alcohol consumption (95% CI [20.8%-25.1%]), 7.4% for smoking cessation (95% CI [6.1%-8.7%]), and 5.7% for follow-up visits (95% CI [4.6-6.9%]). Significant variability was observed between countries in all treatment components except follow-up visits.
Non-adherence to the post-HTx non-pharmacologic treatment regimen is prevalent and shows significant variability internationally, suggesting a need for tailored adherence-enhancing interventions.