

Collecting Data on Immigrants' Health Status and Access to Healthcare through a Mobile App: A Pilot Study in Lombardy, Italy

Background

Empirical studies show that recently arrived migrants have a health profile that is better – or better than expected – than the one of natives (Wallace et al., 2019; Wallace and Kulu, 2014; Trappolini and Giudici, 2021; Feliciano, 2020). This initial 'health advantage' is attributed to the positive self-selection of economic migrants: international economic migrants are not a random group from their home countries, they are positively self-selected based on specific individual characteristics, such as educational and health status (Chiswick, 1999). Moreover, there is a contrasting selection process for migrants who return to their home countries, who tend to be, on average, less healthy. Despite this 'healthy migrant effect', migrants' health generally deteriorates over their lifetime, leading to significant differences in health status when compared to the one of the native population of a similar age (Malmusi et al., 2010). This pattern is described as 'unhealthy assimilation' (Antecol and Bedard 2006, 357).

Several factors explain why the health of migrants deteriorates more than that of natives over the life course (Nazroo, 2003). First, migrants experience a greater deterioration in health because they have greater risks of entering 3D jobs (dirty, dangerous and demanding) compared to natives (Antecol and Bedard 2006; Giuntella and Stella 2017; Wallace et al., 2019). Second, migrants are more likely than natives to adopt unhealthy behaviours and lifestyles, such as sedentary life, smoking, alcohol consumption and unhealthy dietary styles (Mackenbach and Bakker 2001). Third, family disruption, homesickness, loss of social networks and social status, cultural and language barriers might further undermine migrants' health (Borrell et al., 2015; Cela and Barbiano di Belgiojoso, 2019). Finally, migrants encounter various formal and informal obstacles and barriers in accessing health services (Devillanova and Frattini, 2016), due to their legal status, linguistic and cultural barriers, discrimination and stigmatisation (Borrell et al., 2015). When gender and social class are considered as additional stratification mechanisms intersectioning with migration status, it emerges that migration-related health inequalities are more pronounced for migrant women with lower socioeconomic status (Gkiouleka and Huijts 2020). In other words, there are cumulative (dis)advantage mechanisms that amplify the gap between migrants and natives over time (Cela and Barbiano di Belgiojoso, 2021).

Research question

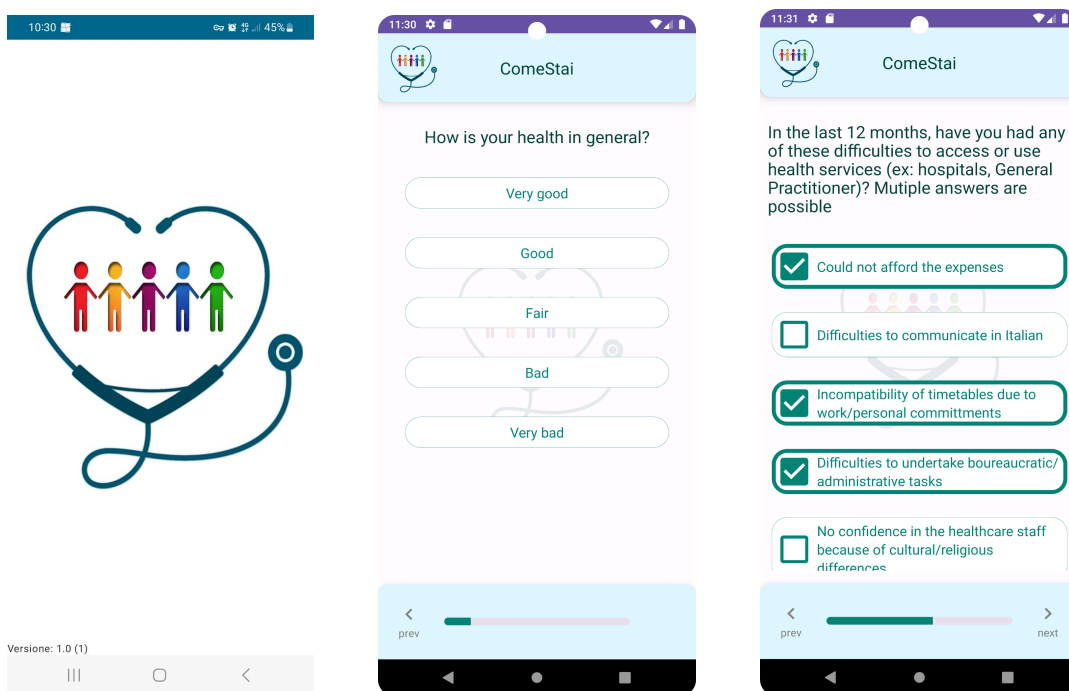
Our study aims at both enhancing the knowledge on immigrants' health inequalities in Italy and testing the use of a mobile app as a data collection tool. We aim to explore the intersection between ethnic, gender and socioeconomic factors that determine health inequalities, by identifying the specific social mechanisms associated with the migration experience that penalize migrants' health over time, as well as those that compensate for their disadvantages. The majority of research on ethnic health inequalities has primarily been carried out in countries with a well-established tradition of immigration, such as the US and the UK (Nazroo, 2003). In contrast, there has been a paucity of studies conducted in Italy and other 'new receiving' countries. Analysing the health of migrants in Italy holds significant importance in the evaluation of their socioeconomic integration.

Methods

The ComeStai ("How are you?") app will collect new and original information on immigrants' self-assessed health status and access to health care through short surveys. The main

questionnaire, about 4 minutes long, is presented when first opening the app. This includes a full set of questions on the respondents' immigrant status (country of first and second citizenship, whether born outside Italy, whether parents born outside Italy, legal status, year of arrival in Italy, migration intentions), health status and health habits (general health status, how was health when in the country of origin, chronic diseases, hospitalizations, smoking, drinking, doing sport), access to and use of health care (whether registered with the NHS; has a General Practitioner; accessed ERs; accessed preventive care screenings; experienced language, cost, cultural, administrative or time/transport barriers; satisfied with the healthcare system), demographic characteristics (age, gender, height, weight, civil status, number of children, family size, municipality of residence) and socioeconomic characteristics (own's education, parents' education, economic status, employment status). Every two months, the app displays a follow-up survey (1 minute) to track key variables over time, including the respondents' health status and experience of barriers in accessing health care. The self-administered questionnaires will be available in the main eight languages spoken by foreigners living in Italy (Albanian, Arabic, Chinese, English, French, Italian, Russian, and Spanish).

Figure 1 - Screenshots from *ComeStai* app



Upon submission of the main questionnaire responses, the user can access an in-app platform that provides comprehensive information on health services, which acts as an incentive for the users to download the app. The platform's contents are built with the contribution of several health NGOs that operate in the Lombardy region. They include an overview of the Italian public health system and regulations, as well as a brief description of the principal public health services available in Italy: Emergency Rooms; "Consultori" (health centers for family and female health care), Servizi per le Tossicodipendenze (centers for addictions), Centri Psicosociali (centers for psychological needs). In addition, the names and locations of the main health centers available on the territory are listed, including those offered by local NGOs. Most in-app contents support external links that allow the user to obtain further information from official or trusted sources. The platform will be updated and expanded over time, ensuring the utility and well functioning of the users' experience.

The use of mobile apps to collect data in the social sciences, and in the field of immigrants' health in particular, has several advantages. First, it allows to collect longitudinal data by tracking respondents over time. Second, it allows to reach segments of the foreigner population that are typically under-represented by official statistics and existing surveys. Third, apps can passively collect data. The ComeStai app will record data on users' navigation within the in-app informative platform, allowing us to understand in which services are users most interested. Finally, the flexible nature of the tool conveniently allows for multiple user languages, as well as the release of updates over time and the replicability of the study at a larger scale.

On the other hand, being the app freely available on the Google and Apple stores, it is not possible to construct a sampling strategy beforehand. To mitigate sample selection bias and enhance the heterogeneity of the target population the ComeStai app will be disseminated among different types of stakeholders in Lombardy Region. Thereafter snowball sampling techniques will be used to enroll additional migrant participants. With the support of CSV Milan ("Centro di Servizio per il Volontariato"), the mobile app will be promoted through the following channels: migrant associations and communities that bring together migrants with longer periods of residence in Italy (e.g., "Rete 2G", religious communities, etc.); NGOs providing assistance to migrants (both on-site and using the NGOs' websites), especially at their arrival; federal association of family doctors; targeted sponsored messages on social networks within specific groups; and foreign students attending university. The dissemination of the mobile app will be extensive in order to ensure a sufficiently large number of responses for robust statistical analysis.

Another potential challenge of using an app as a data collection tool is the higher engagement needed to enroll, compared to e.g. answering an online survey. In addition to the availability of an internet connection, the possession of a suitable mobile device and a basic digital literacy are also pre-requirements for the download of the app. In addition, people may hold worries about their privacy and therefore be suspicious about downloading and/or using the app. For this reason, the app's implementation prioritizes security and privacy. Data on users' phone numbers and geolocation are never collected. Responses to the questionnaires are recorded on a securely protected remote server. This eliminates the need to store answers on the respondents' devices, thus minimizing the risk of unauthorized acquisition of information in the event of phone's loss. To maintain respondent anonymity while allowing for the analyses of time series data related to the same individual, we will generate a unique user identifier (UUID) designed to prevent the tracing of users' personal identity.

Expected findings

We will perform statistical analyses to predict individuals' health status and access to healthcare, while controlling for a set of socio-demographic characteristics, for several groups of interest within the immigrant population: first- vs second-generation immigrants, male vs female immigrants, documented vs undocumented immigrants, lower vs higher socioeconomic background (based on own's education, employment status and economic situation) and different socioeconomic origins (based on parents' education). Further analyses will be conducted to compare the immigrant population and the native population by complementing our dataset with data from the Eurostat's "European Health Interview Survey" (EHIS) and the Istat's "Social Condition and Integration of Foreign Citizens" (SCIF).

We expect in such a way to identify the cumulative (dis)advantage mechanisms that amplify the health gap for certain segments of the migrant population.

In addition, we will evaluate the effectiveness of the mobile app as a tool for collecting data on immigrants' health. Key measures to be checked for the evaluation will be: reached sample size, sample heterogeneity and representativity of the real population, dropout rates over time. Given the findings, we will work on ameliorating the app to possibly extend the research at a wider geographical scale.

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