The role of community trust for compliance with the Swedish COVID-19 immunisation programme

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Abstract

Background and aims: During the COVID-19 pandemic, vaccination as an important and engaging topic once again entered the public debate in many countries, including Sweden. In particular, the varying degree to which different social groups tend to choose to get vaccinated was raised as a point of discussion on the agenda. Thus, the aim of this study was to investigate the role of various forms of trust, especially community trust, in the explanation of vaccine coverage in the Swedish COVID-19 immunisation programme.

Methods: In this study, individual survey data from the Swedish Trust Barometer were aggregated and combined with socio-demographic register-based data at Regional Statistical Areas (RegSO) to examine the relationship between trust and vaccine coverage at the local community level.

Results: The results showed that both generalised and institutional trust seemed to be essential when it comes to explaining vaccination coverage. In addition, we showed that community trust, that is, trust in neighbours and people living in the neighbourhood, was an even stronger factor when it comes to explaining vaccination coverage at the local level.

Conclusions: This article contributes to the literature on trust in relation to health care by identifying a new dimension of trust with significance to immunisation that is worthy of future scholarly attention.

Keywords: Social trust, community trust, vaccination, vaccine coverage

Introduction

During the COVID-19 pandemic, vaccination once again entered the public debate in many sections of society. National immunisation programmes, such as those for the human papillomavirus, measles and the A(H1N1) vaccine with its association with narcolepsy, have stirred debate among both the general public and politicians [1–3]. In particular, the varying degree to which different social groups tend to choose to get vaccinated was raised on the agenda. Several media reports during the summer and autumn of 2021 suggested that low trust in authorities and institutions in neighbourhoods and communities with low socio-economic status were the key explanation for the variation in vaccine coverage [4,5]. Trust is recognised to be important if immunisation programmes are to be effective [6,7]. Moreover, recent research emphasises the role of social trust in health care in general [8–10]. However, trust has many dimensions, ranging from trust in people we do not know at all to trust in neighbours, family, friends and institutions [11]. Therefore, increasing knowledge and understanding in terms of the various dimensions of trust within a population is imperative when designing a national immunisation programme.

Types of trust in health care

The relevance of trust when it comes to health and health promotion has been explained by the implicit power imbalance and information asymmetry between the medical experts and the vulnerable individual [12,13]. In particular, the socio-economic, cultural and demographic determinants on the relationship between trust and vaccination compliance...
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appear to be important [14,15]. The research field has focused on institutional trust, where the focus is primarily on trust in decision makers, health professionals and the government [16].

Some literature has also discussed the social dimension of trust in relation to health and health care, where generalised trust is the most common. Generalised trust can be explained as trust in unfamiliar fellow citizens [11]. Gilson [8] emphasises the importance of including the generalised, interpersonal trust dimension in the interaction between patient and health-care professional in her conceptual paper on trust dimensions in health care. Rönnerstrand [9] also recognises the importance of distinguishing between institutional and generalised trust in an empirical study on vaccine hesitancy in the A(H1N1) pandemic, since both types are independently associated with vaccination intent.

A dimension of trust that is directed at more distinct groups of people than generalised trust – yet still not those closest to you (family, friends) – is trust in people in your close vicinity, that is, community trust. Although communities are important arenas for preventive care and health promotion, and several studies have identified a link between social cohesion at the community level and health [9,17,18], the literature on trust and health has yet to include community trust as a specific type of social trust. Nevertheless, studies have shown that in some cases, community trust may be more useful than generalised trust when studying, for instance, issues of diversity [19].

The Swedish COVID-19 immunisation programme

After the Swedish COVID-19 immunisation programme was accessible to the larger population in the late spring/summer of 2021, it soon became clear that deprived neighbourhoods dramatically lagged behind in terms of vaccination coverage [5,20]. In Sweden, responsibility for organising and administering the vaccinations as well as for communicating information about them to the general public sits at the regional level. Accordingly, there was an element of local adjustment in the design of the immunisation programme. However, while the provision of an accessible infrastructure for performing the vaccination is important [21], social values such as knowledge and trust are also important. In several cases, local civil society organisations have been engaged in the hope that they can reach groups more easily that may not trust information coming from public authorities [22,23]. It could be assumed that in communities with sufficient community trust, such actors may be better suited when it comes to reaching hesitant groups with low institutional trust.

The current study – a local focus

Trust related to vaccinations is complex and must be understood as having different components. Both institutional and generalised trust are important to acknowledge [13]. When it comes to Scandinavian societies specifically, which are becoming increasingly diverse and stratified, the sub-municipal and local perspective becomes more important. To gain a better understanding of local conditions for trust, the measurement of generalised trust may not be enough to capture the important nuances of the social dimension of trust. Therefore, this study aims to examine community trust in addition to the more commonly studied institutional and generalised trust. Community trust is bound to a specific territorial context and thus relates directly to the experiences individuals have with the people in their local community. Moreover, previous studies have demonstrated that community trust is empirically and theoretically distinct and relates to different types of behaviours compared to institutional and generalised trust [24–26]. In this study we aim to contribute to a better understanding of the relationship between community trust and vaccine coverage in comparison to two other types of trust: institutional trust and generalised trust. By so doing, we wish to highlight the community dimension of trust as specifically relevant in relation to vaccination, as this dimension has been overlooked in the literature. A better understanding of the implications of Swedish community trust may help policymakers as well as civil society actors to design their strategies better for a more equal coverage of national immunisation programmes and other public health strategies.

Methods

Participants and procedures

This study combines survey data with register-based data to examine the relationship between trust and vaccine coverage at the local community level. To measure trust, we use the survey data from the Swedish Trust Barometer, which is a survey conducted every three years. The survey questions used to capture different forms of trust in the Trust Barometer are well established and are recurrently used in several large international surveys such as the European Social Survey and the World Values Survey. The most recent Trust Barometer survey was
conducted in 2020 among random samples of individuals (aged 18–84 years) from 49 municipalities across Sweden. These municipalities were randomly chosen in a two-step process. In step 1, all Swedish municipalities (N=290) were put into one of two categories (‘high’ and ‘low’) based on several contextual-level variables, such as immigration-related diversity, socio-economic deprivation and crime rates. In step 2, different subgroups of municipalities were identified. From each of these, two municipalities were then randomly selected by Statistics Sweden. In addition, the three major metropolitan municipalities (i.e. Gothenburg, Malmö and Stockholm) were added to the sample to ensure that major urban areas in Sweden were included in the sample. The survey was mailed by post to respondents, who could complete the survey online or on paper and in Swedish or English. The participation rate was 34.1%. The survey was carried out by Statistics Sweden.

In this study, the individual survey data were aggregated and combined with socio-demographic register-based data at Regional Statistical Areas (RegSO), which are the units of analysis in this study. The reason for conducting the analysis at the RegSO level was that the vaccination statistics were not available at the individual level. RegSO is developed and used by Statistics Sweden. Sweden is divided into 3363 RegSOs with a population of between 663 and 22,622 inhabitants. The number of RegSOs in the municipalities varies between 2 and 147. When we aggregated the individual survey data to the RegSO level, we only included those RegSOs for which we had at least 50 respondents. Afterwards, we ended up with a total of 83 RegSOs, which represent 6678 respondents in total. The characteristics of this population are described in Table I.

**Measures**

**Generalised trust.** This first form of social trust was measured using five statements: (a) ‘One should trust one’s fellow human beings without certain proof that they really are trustworthy’; (b) ‘It is right to trust other people even if you do not know them well’; (c) ‘Most people would try to exploit you given the chance (reversed coded)’; (d) ‘Most people only think about what is good for them and you cannot trust them’; and (e) ‘Most people can be trusted’ (dichotomy; alternative answer ‘You cannot be careful enough’). Participants responded to the first four statements on a four-point scale, ranging from 1 (‘makes little or no sense’) to 4 (‘makes a lot of sense’). Cronbach’s alpha for this scale was 0.80.

**Community trust.** Community trust was measured by a question concerning level of trust in the following groups of people: ‘people living in your neighbourhood’ and ‘your neighbours’. The response scale for this measure ranged from 1 (‘do not trust at all’) to 4 (‘trust completely’). The Pearson correlation coefficient between the two items was 0.70 at the individual level.

**Institutional trust.** Participants’ institutional trust was measured by five items concerning their degree of confidence in the following institutions within their municipality: elected political party/party coalition, police force, elderly care services, employment agency, health-care services, primary school and preschool. The response scale for this measure ranged from 1 (‘very little or no confidence’) to 4 (‘lots of confidence’). Cronbach’s alpha for this scale was 0.84.

**Control variables.** In addition to the main independent variables, the following register-based factors were included in the analysis as control variables: (a) the population size of the RegSOs, (b) proportion of residents with immigrant background, (c) proportion of residents with pre-secondary education, (d) high economic standard rate, which is the proportion of people with an equivalised disposable income >200% of the national median equivalised disposable income, and (e) marital status (proportion of married residents).

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Table I. Sample characteristics.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3167</td>
<td>47.4</td>
</tr>
<tr>
<td>Female</td>
<td>3511</td>
<td>52.6</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean years (SD)</td>
<td>M=58.4</td>
<td>SD=16.2</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>3585</td>
<td>53.7</td>
</tr>
<tr>
<td>Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant background</td>
<td>1592</td>
<td>23.8</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2464</td>
<td>36.9</td>
</tr>
<tr>
<td>High school</td>
<td>2261</td>
<td>33.9</td>
</tr>
<tr>
<td>Post-secondary education/university</td>
<td>1953</td>
<td>29.2</td>
</tr>
</tbody>
</table>

Immigrant background: people born outside Sweden.
The dependent variable – vaccination coverage. The dependent variable in this analysis was the proportion of the population in each RegSO unit that has received the second dose of the COVID-19 vaccine. The data were retrieved from the Public Health Agency of Sweden and present the vaccination coverage as of 18 January 2022. We assumed that by this date, most of the adult population had been offered a second dose of the vaccine.

Analytical strategy

We performed descriptive statistics, correlations and hierarchical regression analysis to describe and analyse the relationship between our variables. All analyses were conducted using IBM SPSS Statistics for Window v26 (IBM Corp., Armonk, NU) in three steps. In step 1, we performed bivariate correlations among all study variables. In step 2, we used partial correlations to examine relationships between all forms of trust and vaccination coverage at the RegSO level, while controlling for various register-based socio-demographic factors. In step 3, we carried out a hierarchical regression analysis with vaccination coverage of the second dose as the dependent variable. This analysis was performed to test the unique contribution of each trust variable, while it also controlled for demographics and the associations among the three forms of trust. Before conducting these analyses, the sample data set was tested for normality, homoscedasticity and multicollinearity.

Results

Descriptive statistics and correlations

The descriptive results showed that the vaccination coverage at the RegSO level ranged from 63% to 96% for the second dose (M=85.9%). On a scale from 1 to 4, the means of the three forms of trust were as follows: generalised trust (2.57), community trust (2.89) and institutional trust (3.31). Thus, the mean of institutional trust was highest, followed by community trust.

Correlations are presented in Table II. The results showed that all three forms of trust were significantly and positively correlated with vaccination coverage of the second dose of the COVID-19 vaccine. In particular, the correlation between community trust and vaccination coverage was very high (r=0.81, p<0.001). There was also a positive correlation between vaccination coverage and the proportion of the population with a high economic standard (r=0.26, p<0.05). At the same time, higher proportions with immigrant background (r=–0.90, p<0.001) and presecondary education (r=–0.38, p<0.001) were negatively correlated with vaccination coverage.

To consider the possible confounding effects of other factors on the relationship between different forms of trust and vaccination coverage, we used partial correlation analysis. The results showed weaker yet statistically significant correlations between vaccination coverage and different forms of trust when we controlled for various demographic variables and population size of the RegSO (see Table III). All in all, the results showed that higher degrees of trust, especially community trust, were associated with higher levels of vaccination coverage at the local geographical level.

Hierarchical regression analysis

Finally, we conducted a two-step regression analysis to determine whether different forms of trust were predictors of vaccination coverage at the RegSO level. In the first step, only trust variables were included in the analysis. A look at the prediction of the second vaccine dose shows that the step 1 variables account for a significant amount of variance in
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vaccination coverage ($R_{adj}^2=0.69$, $F(3, 79)=62.98$, $p<0.001$). The standardised regression coefficients were significant for generalised trust ($\beta=0.20$, $p<0.05$) and community trust ($\beta=0.65$, $p<0.001$) but not for institutional trust. In the next step, after controlling for demographic variables, only the standardised regression coefficient of community trust remained significant ($\beta=0.65$, $p<0.001$). In addition, the proportion of inhabitants with immigrant background significantly ($\beta=0.63$, $p<0.001$) predicted vaccination coverage. This means that a higher proportion of inhabitants with immigrant background predicted decreased vaccination coverage at the local geographical level. Overall, the two-step model accounted for a total of 84% of variance in vaccination coverage, which is very high. All in all, community trust significantly predicted vaccination coverage, even after we controlled for several important demographics. We also tested to expand the model by adding marital status to the regression. The results revealed that the impact of community trust was no longer statistically significant ($\beta=0.08$, $p>0.05$), while there was a significant impact of marital status ($\beta=0.13$, $p<0.05$) on vaccination coverage. However, the insignificant $p$-value of community trust may be due to the low statistical power associated with small sample size and to many control variables in the regression. For this reason, we chose to exclude marital status in Table IV.

### Table III. Partial correlations between vaccination coverage and different forms of trust.

<table>
<thead>
<tr>
<th>Three different forms of trust</th>
<th>Generalised</th>
<th>Community</th>
<th>Institutional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second dose of vaccine (%)</td>
<td>0.29**</td>
<td>0.22*</td>
<td>0.30**</td>
</tr>
</tbody>
</table>

Control variables: population of RegSO, residents with immigrant background (%), proportion with pre-secondary education, proportion with a high economic standard, marital status.

*p<0.05; **p<0.01.

### Table IV. Standardised coefficients from a multivariate hierarchical regression.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable (second dose of vaccine), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalised trust</td>
<td>Model 1 ($\beta$)</td>
</tr>
<tr>
<td>Community trust</td>
<td>0.20*</td>
</tr>
<tr>
<td>Institutional trust</td>
<td>0.65***</td>
</tr>
<tr>
<td>Population of RegSO</td>
<td>0.11</td>
</tr>
<tr>
<td>Residents with immigrant background (%)</td>
<td>–</td>
</tr>
<tr>
<td>Proportion with pre-secondary education</td>
<td>–</td>
</tr>
<tr>
<td>Proportion with high economic standard</td>
<td>–</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.69</td>
</tr>
</tbody>
</table>

*p<0.05; ***p<0.001.

RegSO: Regional Statistical Areas.

Discussion

The aim of this study was to investigate the part community trust played in the Swedish COVID-19 immunisation programme and how it relates to other, better researched types of trust. The findings of the study are consistent with previous literature that show that both generalised and institutional trust seem to be essential when it comes to explaining vaccination coverage [9]. In addition, we show that community trust is an even stronger factor when it comes to explaining vaccination coverage at the local level. In a control for relevant demographic factors, as well as for different types of trust, community trust remains significant. As such, the article contributes to the literature on trust and health, since it identifies a new dimension of trust with significance to health and health care that is worthy of future scholarly attention.

The central role of community trust for immunisation may have several explanations. Given that we have seen that the degree of immunisation varies at a sub-municipal level and that deprived areas with a large proportion of immigrants tend to lag behind, it would be relevant to study trust in one’s local community specifically. The strong explanatory power of immigrant background on vaccination coverage is an important finding in itself. Its dominant position among the independent variables could explain why other variables, including institutional and generalised trust, were insignificant.
Nevertheless, as community trust remained significant when controlling for immigrant background and other demographic factors, the significance of community trust is rather explained by the characteristic of the relationship between neighbours, simply as people in the close surroundings, irrespective of socio-economic status or immigrant background. This leads us to believe that the significance of community trust is a spatial rather than socio-demographic issue.

The pandemic of an airborne virus is also spatial in its nature. The vaccination status of neighbours is of direct relevance to our own health. The threat of a pandemic within a community is something that needs to be addressed by the local community in terms of changed behaviour in the public and the acceptance of available vaccines. Therefore, trust in the local community and the potential increase in social cohesion and social capital that this may lead to may be more relevant than generalised trust when it comes to studying behaviour that can prevent local, spatial threats, such as a pandemic.

We also tested to expand the regression analysis by adding marital status to the model, as this could be related to willingness to have the COVID-19 vaccination [27]. The results revealed that when including marital status to the model, the impact of community trust was no longer statistically significant. In the end, however, marital status was excluded from the model, partly for the methodological reasons discussed in our results section, but also due its close relationship to social trust. Previous research has shown that married individuals have a higher level of social trust compared to those who are not married or divorced [28–30]. In addition, marriage is, like social trust, viewed by some researchers as an indicator of family-level social capital [31]. All in all, it makes sense that marital status, like social trust, is associated with vaccination coverage, but also that it rolls out the impact of community trust. For this reason, we chose not to include marital status in our analysis. However, the future research should test the impact of marital status with a bigger sample size to enhance the understanding of the topic further.

This study has limitations and strengths that warrant attention. The data were drawn from a sample of 49 of the 290 municipalities in Sweden, which together represent Sweden well from both socio-economic and demographic aspects. However, the low participant rate limits the generalisation of the results from this study, and the study need to be cross-validated in other countries and contexts. Another potential limitation is that our data set does not cover all RegSO units. The choice to exclude some RegSOs, however, must be considered in regard to the alternative, which was the risk of having too few respondents in some areas, which in itself would constitute a reliability risk. Our hope is that we can complement this study with further analyses of a broader sample in the future. Nonetheless, the findings of the study on types of trust that have previously been studied (institutional and generalised trust) are well in line with previous research, which makes it likely that our overall findings are both representative and generalisable. A third limitation concerns adjustment for additional confounders. One of those concerns a previous positive COVID-19 diagnosis, which could affect our conclusions. However, as we did not have access to register data, we were not able to control for the potential previous infections at the RegSO level. At the same time, we have taken into consideration a number of other control variables. Despite its limitations, the data are unique, since they enable the measurement of many types of trust while also allowing for comparisons of public register data at a sub-municipal level.

The strength of the study is that it contributes to the development of trust literature in relation to health care in general and immunisation programmes in particular. It is the first study of community trust in terms of vaccination coverage at a local level, and furthermore it is unique in that it includes three different types of trust in the analytical model. The findings contribute to and strengthen the understanding of the role of trust in the health-care sector as a multidimensional and complex construct. By providing a better understanding of the relevance of community trust for public health and health care, this study can help guide public health strategists and other policymakers in the development of more precise tools to achieve compliance in terms of preventive care and health promotion policies.

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