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COVID-19, protest movements and the Polish Tweetosphere

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Introduction

Demonstrations against racism such as BLM (Black Lives Matter) in May 2020 in the USA (Dave et al., 2020; Neyman & Dalsey, 2020; Quigley et al., 2020) or significant anti COVID-19 measures protests in Germany in August (Jarynowski, Semenov, & Belik, 2020), which took place without satisfying sanitary regimes, did not significantly influence COVID-19 incidence rates. On the other hand, due to the different forms of protests, weather and dissemination patterns, despite attempts to cover the mouth and noses, Polish protests, with a high probability, accelerated the transmission dynamics, but it is not known to what extent. There were anti-government protests in October 2020 in Poland (the biggest since 1989), in particular, by the pro-choice movement (in the context of the abortion ban) as well as farmers and COVID-19 sceptics. The social movements' aspirations to change the law combining political conflict and the politics of civil rights, were in conflict with the epidemiological threat of the COVID-19 pandemic. The transmission of SARS-CoV-2 is facilitated by contact between people, as the virus is spread through respiratory droplets for short distances up to 1–2m (and only with very little evidence as airborne for longer distances) and contact with contaminated surfaces, so being outdoors is not the best environment for its transmission (WHO, 2020). However, the longer the time people spend together and the larger the gathering, the higher the risk. Contact tracing studies suggest that the vast majority of transmissions (95%) occur in indoor settings compared with outdoor environments where risk is almost 20 fold lower (Weed & Foad, 2020). Unfortunately, shouting and producing massive amounts of droplets can significantly increase transmission probabilities. Moreover, protesters could use public or shared transport, dine or spend time together before and/or after the street protest.

Protesters are situated in the dilemma between competing factors (Salon24, 2020): their political and social interest and the danger of infecting themselves or others during the COVID-19 threat. In this study, we

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look at the question of how understanding communication patterns among protesters could possibly support epidemiological harm reduction. Media and health communication research methods gain huge interest due to infodemiological preparedness, while during the first year of pandemic only NPIs (Nonpharmaceutical Interventions) mitigation methods were available. Effective "turning into action" becomes the holy Grail of the pandemic. However these strategies depend massively on communication strategies and their perception in the population. Adherence to health communicates is a complex phenomenon and is driven by many mediating variables (e.g. level of trust in sender, interest in topic, emotions, timing) that could vary among different subpopulations (and this is the main purpose of this article – to indicate this problem).

We explore the role of social media (Twitter) in protest participation to potentially find the most effective COVID-19 risk awareness communication. We ask the following questions: what is the content of tweets, who is the sender of information, when and where do campaigns take place and how information is provided or blocked in the existing channels. The idealised communication concerned restrictions relating to the pandemic risks such as the covering of mouth and nose, physical distancing and hand/respiratory hygiene along (DDM: Distance – Disinfection – Mask) with access to PPE (Personal Protective Equipment) for protesters and their further contact security. Moreover, it should be clearly stated (WHO, 2020) that people with COVID-19 like symptoms must not attend protests and all participants should observe their health and consider minimising physical contact with the most at risk populations (seniors or people with immunodeficiency diseases).

Protests

The timeline of protests gives us a temporal perspective of the extraordinary October 2020 (Jarynowski & Płatek, 2021). Coronasceptic protests happened in various locations on weekends with a culmination of a big event on 11 October in Warsaw. Farmers protested during weekdays and three massive organised events could be distinguished at the period. A further accumulation of protests took place on 28 October. Thus, the October protests definitely increased contact rates and mobility in the time of high prevalence of SARS-CoV-2 in the population with decreasing general immunity due to the autumn (i.e. seasonal changes in human immune function). Moreover, there was a discussion about the contribution of these protests to the peak of registered infections in Poland which reached over 30k cases daily at the beginning of November (Rogalski, 2020).

In traditional media, agricultural and anti-COVID-19 protests were a few times less represented in relation to the Women's Strike (Jarynowski & Płatek, 2021). On the other hand, the difference in social media is incomparably more marked, because Tweets concerning the Woman's Strike are

counted in hundreds of thousands, while there are only 20,000 about anti COVID-19 protests, and 10,000 agricultural protests. Moreover, the share of Twitter mentions in general discussion in the whole range of internet media is only 3% for the Farmers Protest, 5% for the Women's strike, but almost 40% for coronascepticism (Jarynowski & Płatek, 2021), so the vast majority of the discourse is not covered in this study.

Farmers' protests. PiS (governing party in Poland) in September proposed the so-called Five for Animals which attempted to extend animal rights (Sejm, 2020), but at the same time it hit a number of sectors of Polish agriculture. The proposal of new governmental regulations and ethical standards warmed up conflicts within various social groups of interest. Agricultural protests were widely distributed around the whole country and concentrated around the middle of October. The feeling of abandonment (by the State) and powerlessness (what can be done?) is characteristic of all farmers especially due to the COVID-19 pandemic situation. The announcement of new restrictions in Autumn 2020 (as remote work prioritisation in public administration) due to the COVID-19 pandemic in Poland imposed irregularities on activities of veterinary inspection and other services related to animal welfare, as well as diverting a certain amount of foreseen budget funds to this.

Coronascepticism protests. Risk uncertainties induce ongoing protests and demonstrations (Jarynowski et al., 2020; Jarynowski, Semenov, & Belik, 2020) against COVID-19 pandemic mitigation strategies (PEW, 2020) such as lockdown and mandatory mask wearing. Protest movements over the responses to the COVID-19 pandemic are organising themselves around the world. Every Polish region or even group of protesters have a distinct perspective and different issues driving the protests. Some question the need for the lockdown, fear of the economic consequences of a disease "not more dangerous than a flu" or are upset by strong social or freedom injustice. Some protest against alleged citizen rights violations, others claim the pandemic was planned (the "plandemic" conspiracy). Others are afraid of yet to come vaccination campaigns, which were available in Poland since December 2020. Demonstrations against measures have been happening since May (e.g. entrepreneurs protest "protest przedsiębiorców") with cumulative events in August (e.g. cancel the plandemic "odwołać plandemię") and in October 2020 (e.g. marches for freedom "marsze o wolność"). Protesters gather in public spaces disobeying the rules, not wearing masks and not respecting the physical distance to emphasise that the existing restrictions should not be imposed (Kowalewski, 2020).

Woman's strikes. The Constitutional Tribunal made a decision on 22 October 2020 to restrict abortion to the most severe cases leading to lethal conditions. This met with widespread disagreement and took protesters to the streets. Not only did the Women's Strike movement (Korolczuk et al., 2019) quickly manage to mobilise the opponents of the anti-abortion law, but it was capable of allowing the expression of adolescents who lacked

social interaction due to the closure of schools and other social points of interest (IBI, 2020; Kowalewski, 2020). Street protests began on the night of 23 October with the culmination on 28 and 30 October with 400,000 participants around Poland with almost 100,000 in Warsaw.

Theoretical research problems, aims and methodological challenges of the pandemic study

During the pandemic, people are increasingly using the internet to communicate and to express their voice. Therefore, media monitoring could be a method for preparing resources and safety precautions before a protest occurs. Social media (as Twitter) plays a critical role in communication before, during and after protests (Kowalewski, 2020), but they can also be a way to communicate reliable information about the spread of infection risk (Burzyńska, Bartosiewicz, & Rękas, 2020) and interventions for harm reduction. The media (the agenda-setting (Gałuszka et al., 2017) and cultivation frameworks) inform the public of what issues seem to be important or not with repeated exposure to chosen events (e.g. by showing only the violence in the protest). Moreover, online interactions in social media due to the mechanism of flaming, filter bubbles and echo chambers led to cyberbalkanisation (modern cyber tribes), group-thinking (the false consensus effect on epidemiological risk), herd behaviour (not planned violence in protests) and confirmation bias (Qureshi et al., 2020). Echo chambers and propaganda led to the reinforcement of misinformation and misguided beliefs on real epidemiological risk of infectious disease with cognitive bias mechanisms as perils of perception (Gigerenzer & Edwards, 2003). Socio-cultural polarisation (Qureshi et al., 2020) induced by social media poses a dangerous problem for society and influencers, scientists, journalists and politicians should try to mitigate polarisation.

Twitter in Poland has relatively low popularity in comparison to Facebook/YouTube leaders on the Polish social media market (6 million registered accounts and 1.5 million active users which correspond to 5% of the literate population (IAB, 2020)) and is mainly used by expats, journalists and politicians. It's also biased ((PBI, 2019) towards males (65%), young adults (70% of users 15–34-year-olds) and inhabitants of big cities (affinity index 140). Twitter's audience is more professionalised than the general population and is more likely to be described as "elite communication" in comparison to Facebook "massive communication" (Matuszewski & Szabó, 2019). As with other social media, it significantly increased its users and their activity during the pandemic (Statista, 2020; Washington Post, 2020). Surveys showed that 42–70% of Poles get their COVID-19 information from social media (8% from Twitter), more often than from local and government sources or health professionals (Wójta-Kempa, 2020). Trust in national politicians and government is far below the EU average. Moreover trust in institutional and traditional media in Poland is even lower (Eurobarometer, 2014; Jarynowski, 2020).

Empirical explanation of methodology in the context of the pandemic

We analysed:

- the number and nature of social media events such as tweet volume time series;
- the sentiment and conceptual fields;
- social networks. We analyse retweeting activity (the golden standard for social media engagement with better information propagation prediction liability than following, commenting, replying and so on. (Boyd, Golder, & Lotan, 2010)) to construct our network. Each retweet is a directed link between nodes – that is, users. Louvain community detection of retweets was applied to shed light on structure and the Fruchterman-Reingold layout algorithm was used for visualisation (Wasserman, Faust et al., 1994; Blondel et al., 2008);
- identifying main agents with centrality measure on propagation network (defined as a weighed degree – sum of links – retweeting of being retweeted by other users);
- the demographic and geographical profiling of users (in aggregated form).

Functionalities provided by Twitter (retweet, mention, reply and following) allow for the investigating of communication paths (interaction in social networks) and their presumable changes across time. A high segregation of the propagation of information (Guerrero-Solé, 2018), due to polarised echo chambers and filter bubbles could be a barrier in pro-health communication delivery.

We have chosen the following keywords for tweets published in Polish between 1 and 31 October 2020. They were analysed using rtweet package in *R*:

- #Strajkkobiet representing the Women's Strike (227,125),
- #zajob representing the coronascepticism movement (22,379),
- #ProtestRolników for the Farmers' Protest (9,739).

Twitter provides an API for data acquisition available to the researchers for free (in contrast to other social media platforms popular in Poland). This allowed us to analyse not only the content of tweets but also their context (location, retweeting, etc.). We comply with API Terms and Conditions of Twitter. Moreover, the collected data is originally posted on the Internet and thus users have been already voluntarily sharing their activity on the public domain.

There are other hashtags which were popular earlier on or came later into use as internet users changed relating to the hashtag (Nacher, 2020). Consistency of material was verified against commercial media monitoring

tools such as SentiOne, CoSMos and Brand24. The Women's Strike and the farmers' protests are well described by given hashtags and samples (Twitter recognises tweets compatible to a given hashtag, even if it wasn't explicitly there) whereas the coronascepticism movement is more difficult to describe by a single hashtag (Cierpich-Kozieł, 2020; Jarynowski, 2020). "Zajob" is a slang word for weirdness, craziness and is associated with SARS-CoV-2 virus and the overreacting, panic-like behaviour of the media and majority of the Polish population.

Research results

We visualise communication patterns for each protest in the same manner in Figures 16.1, 16.2 and 16.3. Nodes (coloured in scale of grey by the community detection algorithm) are twitter users and edges are retweets. The labels indicate the name of the community.

The Women's Strike. Out of 52,779 Twitter users engaged in the Women's Strike, 47,146 interacted by tweeting.

The retweet network is composed mainly of the pro-choice component (87% of accounts), but we see an isolated pro-life cluster (12% of accounts) on the right (Figure 16.1). The communities in the main component (87%) are quite interconnected, but there is a clear internal structure:

- the upper dominant cluster (Youth – 40%) consists of mainly of young people;
- the middle cluster is largely composed of politicians and the media (7%);
- the bottom cluster is characterised by a large representation of left-wing activists (pro-choice activists – 22%).

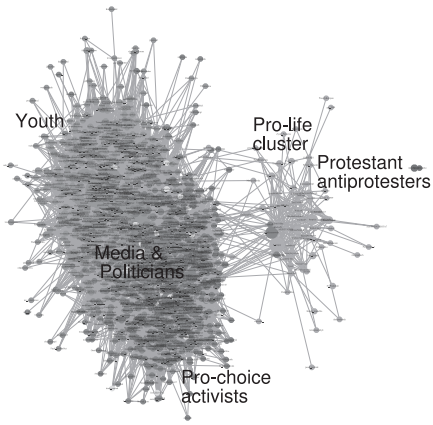

Figure 16.1 Weighted retweet network of 1,729 most central accounts participating in the #Strajkkobiet discourse.

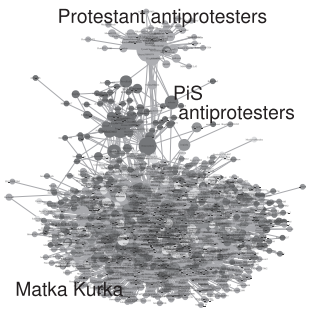

Figure 16.2 Weighted retweet network of 1,559 most central Twitter accounts participating in the coronascepticism discourse.

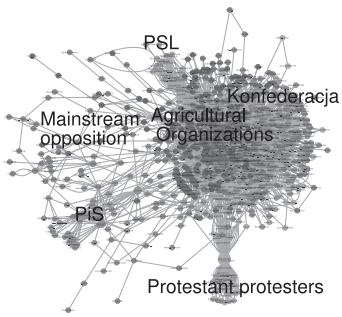

Figure 16.3 Weighted retweet network of 1,123 most central accounts on Twitter participating in the agricultural protest discourse.

This protest Tweetosphere is dominated by youth (60% of content is generated by <25-year-olds (_wsieci, 2020)) and it seems that they are the driving force behind the protests.

The vocabulary in the discourse is quite vulgar and with a clearly dominant negative tinge (Jarynowski & Płatek, 2021), especially after the protests on the streets. Tweeters (a small percentage of those who provide their locations) are most closely associated with Warsaw, and second with large cities such as Wrocław, Kraków, Poznań and Gdańsk. Protests happened in many more locations in Poland, but the vast majority of content was concentrated in the biggest metropolises with almost 30% probably of foreign origin (_wsieci, 2020).

We see a large fraction of accounts created in spring 2020 (probably due to the pandemic and the transfer of social activity to the internet) as well as close to the time of the protests (Jarynowski & Płatek, 2021). However, there are many experienced Twitter users (probably activists).

Coronascepticism protests. Three thousand eighty-nine users were engaged in discourse, while two thousand eight hundred and twenty one retweeted or were retweeted at least once.

Coronasceptic protesters are in a main component on the bottom, while protests opponents are on the top (Figure 16.2). The coronascepticism movement protest on Twitter is extremely granulated (the lowest modularity among all protests) and differs significantly to the rest of the movements as well to anti COVID-19 discourse in other countries (Jarynowski, Semenov, & Belik, 2020). It is difficult to distinguish communities but at the top: Protestants against anti COVID-19 protests (4% of all accounts); followed by: supporting PiS against anti COVID-19 protests (8%) which are outside of the main discourse network. In the main network of protest supporters (88%) there is only one single established community – Matka Kurka's bubble (23%). On the other hand, this network is the densest (amount of retweets normalised to possible connections) among all protests.

Coronascepticism discourse is concentrated mainly around Pomerania, Greater Poland and secondary in Masovia, Silesia and Lower Silesia (Jarynowski & Płatek, 2021). This configuration corresponds to the popularity of anti-vaccination movements (Jarynowski & Skawina, 2021). Coronasceptcism discourse is dominated by males (for males it's as frequently mentioned (popularity) as the Women's Strike (Jarynowski & Płatek, 2021)) for one woman there are four males, so health promotion communication (if somebody decides to) should be definitely targeted. Tweets around coronascepticism are usually released late evening and often during weekends.

Farmers' protests. The geographical distribution of agricultural protests, despite the COVID-19 pandemic and restrictions on the freedom of assembly, was therefore huge and widespread. However, the majority of tweets came from the Masovia region (Jarynowski & Płatek, 2021). Very low coverage of tweets from Eastern Poland could suggest that Twitter is not popular there among farmers. Two thousand eight hundred and twelve users were engaged in discourse, while two thousand five hundred and ninety five retweeted or were retweeted at least once. On the left are situated protest opponents and the main component are various sub-communities of protest supporters (Figure 16.3).

Retweeting network for hashtag #Strajkrolników showed a clear community structure (Figure 16.3) Communities against protests (25% of all accounts):

- upper left – opponents of protests from the mainstream opposition (12%);
- lower left – opponents of protest associated with PiS – a governing party (13%).

Communities supporting protests:

- bottom – Protestant protesters (6%);
- middle – protesting farmers and agricultural organisations (26%);
- right – supporters of protests within right-wing organisations such as Konfederacja (16%);
- top – supporters of protests associated with the agricultural party PSL (6%).

Tweets produced around the Farmers' Protest (Jarynowski & Płatek, 2021) concentrate around late morning (the time after post sunrise grooming of animals) with the main activity during working days as protests usually happened on Wednesdays.

Conclusions

This chapter offers an empirical illustration for complementing aggregative communication patterns on selected social media platforms (Twitter) with relational methods in the sociology (Matuszewski & Szabó, 2019) of social movements and infodemiology (Eysenbach, 2020). It seems that the medical community in Poland believed that the delivery of scientific information will result in direct adherence to harm reduction communicates. However the first year of the pandemic changed the perspective of understanding role media influence to be much more complex. Thus, groups of physicians, psychologists and media researchers are currently cooperating to a much higher extent, as it was before 2020. Moreover, due to the COVID-19 pandemic, the importance of infectious disease spread in mass gathering is nowadays more important than ever before (WHO, 2020). In November 2020, the number of death cases exceeded almost double the average rates for the previous years in Poland and protests could at least partially have caused it (Rogalski, 2020). Epidemiologists repeated a stay-at-home appeal during the protests and encouraged online activity instead of street protests. Nevertheless, people went out onto the streets (Żuk & Żuk, 2015), so this situation required the adaptation of existing tactics and the use of innovative communication for harm reduction with a focus on DDM principles. The transmission risk, due to the failure of the use of the DDM principles by participants in the protests, should have definitely been announced and communicated to attendees of street demonstrations. Due to the possible stressful conditions combined with high emotions, communication on proper nutrition, hydration and avoiding drugs or stimulants is welcome. Public health advice in a pandemic must not depend on accepting reason for gathering. The main role of public health authorities and experts is the delivery of information to people (who will make the final decision) and providing communication on harm reduction (Bartscher et al., 2020). The negative consequences of polarisation, such as Cyberbalkanisation/

Splitinternet observed in the farmer and women protests (Figures 16.1 and 16.3), need enhanced depolarising social actions and intervention (with a potentially significant role of media), at least in the public health dimension (Jarynowski, 2020).

Practical recommendations

Each protest type is characterised by its own structure of communication and different (suggested below) information campaigns or information blocking should be applied to in order to optimise the epidemiological effect.

Coronascepticism protests. The coronascepticism movement is by definition resistant to information campaigns (Kowalewski, 2020; Sternisko, Cichocka, & Van Bavel, 2020), so the general public should be an audience for communication. High granulation of the coronasceptic movement indicates that there is no clear leadership and protesters form small communities weakly connected to each other (Figure 16.2). This could be linked to the high individualism of participants representing various ideologies such as far right religious ideologies (Borsch et al., 2020), as Catholic, Protestant (clear community of "Idź Pod Prąd") or other populist ideologies (Żuk & Żuk, 2020). It is important to mention that ideologies popular in anti-COVID-19 movements abroad such as QAnon were hardly observed in Poland. Twitter accounts potentially belonging to so-called trolls (which in other studies were classified as extreme right in the context of elections (OKO, 2019)), or to the far-left side in the context of the African Swine Fever epizootic (Jarynowski et al., 2019), promoted content in discussion on COVID-19 (Jarynowski, Wójta-Kempa, & Belik, 2020) by attacking both protesters and government. Pro healthy communication does seem to influence the coronasceptic protesters. Very high network density with very low modularity suggests that the main component, even if having no internal hierarchical structure, is well interconnected. This implies that such a network is resilient to interventions such as the blocking of single accounts (Twitter, 2021) or inhibiting reach of content, is not efficient due to the possibility of information propagation by multiple paths (Kim, Chen, & Linderman, 2015).

The Woman's Strike. The main participants of the street protests were young females from big cities, so communication should be framed directly for them (Salon24, 2020). Moreover, they form separated echo chambers to the leaders of the protest (Figure 16.1). Thus, it would be important to formulate health promotion messages among them with the use of social media and Instagram (Buzzup, 2020) may even be better than Twitter. Due to the modular structure of the network, where activists, the media, and politicians are in separate communities to the main population (Figure 16.1), probably the organisers or protest leaders will not be able to propagate pro-health communication towards the younger cluster. We strongly advise any user to be active in creating their health promotion content and

the redistribution of existing ones. A key message to the protesters should be to protect the more susceptible to COVID-19. For instance, disseminating suggestions for younger protest participants to avoid physical contact with their grandparents if possible, as well as suggestions for monitoring their health status.

The farmers' protests. Farmer protest communication has the most modular structure and topology with clear boundaries between communities and opinion leaders (Figure 16.3). This meant that the main agents such as recognised governmental agencies, agricultural media, journalists, politicians, and influential farmers could propagate DDM campaigns for their followers. The only question is how to involve them in campaigns. Farmer protesters, mainly middle- aged males (for one women there are two males (Jarynowski & Płatek, 2021)), should be additionally notified, as they could be in higher risk groups for developing severe cases of COVID-19, as well as the possibility of them being super-spreaders due to the possible high viral load of SARS-CoV-2 in respiratory secretions. Thus, influencing agents (González-Bailón, Borge-Holthoefer, & Moreno, 2013) should urge people who have any symptoms of COVID-19 or those who have pre-existing medical conditions to avoid attending protests. Moreover, framing time (Jarynowski & Płatek, 2021) based on agricultural daily routines should be considered for campaigns.

It's important to stress that there is no universal solution in communicating risk due to substantial structural differences in each protest. For instance involving leaders from farmers' organisations is highly recommended, which is not the case with formal leaders of pro-choice movement (according to communication patterns only). In all presented discourses, we observe collective oppositions: us (protesters) vs others (clear division between protesters and their opponents). In this sense, the messages of influencers from the inside of a community would be preferred. It is essential that the organisers of protests take civil responsibility for providing meaningful epidemiological risk assessment (including information on proper behaviour during and after protests and risk assessment) in the absence of legitimacy of governmental bodies. Also peripheral participants (such as average protesters) could be involved in increasing the reach of safety messages during the protests (Barberá et al., 2015). In this study we have assessed the theoretical influence of pro-healthy intervention (as communicates) from a structural perspective only (who should be the sender, when message should be delivered, etc.). In future other aspects, such as communicates content, could be investigated too in a real life experimental setting.

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