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Rozprawa doktorska

„Wybrane czynniki intra- oraz interpersonalne a objawy psychopatologiczne w populacji ogólnej w czasie pandemii Sars-CoV-2”

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1. Streszczenie

Wstęp: Kluczową komponentą osiągnięcia, utrzymania oraz przywrócenia zdrowia psychicznego jest umiejętność adaptacji do nowych wyzwań i trudności. Wśród czynników warunkujących reagowanie na wymogi danych sytuacji, szczególnie tych negatywnych, wymieniane są strategie radzenia sobie. Klasyfikowane są one jako czynniki intrapersonalne wpływające na dobrostan psychiczny. Strategie radzenia sobie obejmują ogół podejmowanych wysiłków, zarówno poznawczych i behawioralnych, mających na celu utrzymanie lub rozwój osobistych zasobów. Natomiast jednym z czynników interpersonalnych wpływających na zdolność adaptacji do zmieniających się warunków jest wsparcie społeczne, które odnosi się do interakcji międzyludzkich. Szczególny jego rodzaj, spostrzegane wsparcie społeczne, określa w jaki sposób odbierane jest wsparcie emocjonalne i materialne otrzymywane od rodziny, przyjaciół oraz osób znaczących, a także w jaki sposób rezonuje ono z poczuciem własnej wartości. Co więcej, spostrzegane wsparcie społeczne może mieć większe znaczenie w kontekście dobrostanu psychicznego niż to realnie otrzymywane. Zarówno czynniki intra- jak i interpersonalne mogą wpływać na pojawienie się lub nasilenie objawów psychopatologicznych, co z kolei manifestuje się zaburzeniami funkcjonowania w życiu codziennym. Podobne konsekwencje może nieść za sobą cyberchondria – nowy koncept medyczny na skraju hipochondrii oraz zaburzenia obsesyjno-kompulsyjnego. Cyberchondria wiąże się z narastającym lękiem o własne zdrowie spowodowanym wyszukiwaniem poszczególnych objawów w internecie, generującym dalszy wysiłek celem wykluczenia choroby.

Cel: Celami pracy były: **(**1) określenie dominujących konfiguracji strategii radzenia sobie pośród osób aktywnych zawodowo, zestawienie ich pod względem czynników indywidualnych oraz nasilenia objawów psychopatologicznych ze szczególnym uwzględnieniem różnic między pracownikami medycznymi i niemedycznymi, a także identyfikacja determinantów tych objawów w grupie badanej w czasie pandemii SARS-CoV-2, (2) oszacowanie nasilenia lęku o zdrowie oraz cyberchondrii

w grupie badanej oraz określenie czynników socjodemograficznych, klinicznych i pandemicznych związanych z jej bardziej nasilonym obrazem, (3) ocena roli mediującej spostrzeganego wsparcia społecznego i cyberchondrii na związek między lękiem o zdrowie oraz jakością życia.

Materiał i metody: Grupę badaną we wszystkich analizach stanowili dorośli przedstawiciele populacji ogólnej korzystającej z internetu, którzy po zapoznaniu się z informacją o badaniu zgodzili się na wypełnienie wszystkich kwestionariuszy oraz przesłali je do badaczy za pomocą formularzy internetowych (technika wspomaganego komputerowo wywiadu z użyciem formularzy internetowych CAWI). Pierwszy cel wiązał się z analizą danych pochodzących od 1831 respondentów, którzy wypełnili Kwestionariusz Ogólnego Stanu Zdrowia (GHQ-28) Goldberga, Zrewidowaną Skalę Wpływu Wydarzeń (IES-R), Inwentarz do Pomiaru Radzenia Sobie ze Stresem (MiniCOPE) oraz ankietę socjodemograficzną. Cel drugi oraz trzeci zrealizowane zostały z udziałem 538 respondentów, którzy badani byli za pomocą następujących narzędzi: Skali Cyberchondrii (polska adaptacja Cyberchondria Severity Scale, CSS-PL), Inwentarza Lęku o Zdrowie (Short Health Anxiety Inventory, SHAI), Skali Jakości Życia (The Quality of Life Scale, QOLS), Wielowymiarowej Skali Spostrzeganego Wsparcia Społecznego (polską adaptację Multidimensional Scale of Perceived Social Support, MSPSS) wraz ankiety socjodemograficznej.

Wyniki: (1) Analiza skupień pozwoliła na podział grupy badanej na trzy klastry odnoszące się do najczęściej stosowanych konfiguracji strategii radzenia sobie – adaptacyjny, nieadaptacyjny oraz niespecyficzny. Osoby stosujące nieadaptacyjne sposoby radzenia sobie osiągnęły istotnie wyższe wyniki całkowite i poszczególnych podskal IES-R oraz GHQ-28, w tym wyniki przekraczające punkt odcięcia w skali GHQ-28 zwane pozytywnymi dla rozpoznania istotnych zaburzeń psychicznych, w porównaniu do klastra adaptacyjnego i niespecyficznego. Kiedy porównano klaster adaptacyjny z niespecyficznym, odnotowano z kolei istotnie wyższe wyniki GHQ-28 w zakresie wyniku całkowitego, pozytywnego, jak i podskal dotyczących dysfunkcji

społecznej oraz nasilonych objawów depresyjnych w klastrze niespecyficznym. Utylizowanie nieadaptacyjnej konfiguracji strategii w grupie medyków i niemedyków wiązało się z uzyskaniem istotnie wyższej punktacji całkowitej oraz poszczególnych podskal GHQ-28 i IES-R w porównaniu do klastrów adaptacyjnego i niespecyficznego. Pracownicy ochrony zdrowia skupieni w klastrze adaptacyjnym zdobyli istotnie niższe wyniki całkowite, a także podskal badających objawy somatyczne, dysfunkcję społeczną i nasilone objawy depresyjne w porównaniu do klastra niespecyficznego. Jednocześnie, istotnie częściej manifestowali oni objawy psychopatologiczne w porównaniu do medyków używających strategii niespecyficznych. Podobnej zależności nie zaobserwowano wśród respondentów z branż niemedycznych. Różnice między wynikami całkowitymi oraz podskal IES-R pośród medyków i niemedyków stosujących strategie adaptacyjne oraz niespecyficzne nie okazały się istotne. Płeć żeńska determinowała wyższe wyniki całkowite oraz wszystkich podskal GHQ-28 oraz IES-R. Zawód niemedyczny determinował niższe wyniki całkowite w skali GHQ-28, a także podskal związanych z objawami somatycznymi, lękiem i bezsennością. Posiadanie dzieci z kolei determinowało niższe wyniki w podskali GHQ-28 dotyczącej nasilonych objawów depresyjnych. (2) Ponadto, wysoki poziom lęku o zdrowie i nasilone objawy cyberchondrii stwierdzono u 30,86% uczestników badania. Zasadniczymi determinantami nasilonego lęku o zdrowie oraz cyberchondrii w grupie badanej okazały się nieaktywność zawodowa, przewlekłe choroby psychiczne oraz subiektywne ograniczenie dostępu do opieki zdrowotnej z powodu pandemii SARS-CoV-2. (3) Lęk o zdrowie istotnie obniżał jakość życia zarówno bezpośrednio, jak i pośrednio poprzez niskie spostrzegane wsparcie społeczne. Spostrzegane wsparcie społeczne częściowo mediowało związek między lękiem o zdrowie a jakością życia. Cyberchondria natomiast nie wpływała istotnie w sposób bezpośredni na jakość życia. Wynika z tego, że cyberchondria nie mediowała związku pomiędzy lękiem o zdrowie a jakością życia.

Wnioski: (1) Respondenci badania manifestowali objawy psychopatologiczne, w tym objawy zespołu stresu pourazowego, niezależnie od stosowanych sposobów radzenia sobie. W związku z tym, celem utrzymania dobrostanu zarówno pracowników sektora medycznego, jak i niemedycznego w obliczu kryzysu epidemiologicznego, konieczne jest dostosowane oraz oparte o dowody wsparcie psychologiczne. (2) Nasilone objawy lęku o zdrowie i cyberchondrii stwierdzono niemal u jednej trzeciej respondentów. Czynniki determinujące nasilony lęk o zdrowie oraz cyberchondrię korespondują z obszarami życia codziennego szczególnie dotkniętymi przez pandemię takimi jak stabilność zatrudnienia, zdrowie psychiczne czy dostęp do usług medycznych. (3) Cyberchondria nie wpływa istotnie na jakość życia w przeciwieństwie do lęku o zdrowie. Wzmacnianie spostrzeganego wsparcia społecznego może zmniejszać niekorzystny wpływ lęku o zdrowie na jakość życia.

2. Abstract

Introduction: Adapting to new challenges and difficulties is a key component Of becoming healthy or maintaining and regaining health. Coping strategies are listed among elements crucial for reacting to a stressful situation. These are classified as interpersonal factors and defined as cognitive and behavioural self-referential strategies aimed at the maintaining or developing personal resources. An example of an interpersonal factor that affects the ability to adapt to changing conditions is social support related to interpersonal interactions. It is a particular type of perceived social support that determines how the emotional and material support received from family, friends and relevant people is regarded and how it resonates with one's self-esteem. Indeed, perceived social support may be more important regarding how social support resonates with mental wellness than received social support. Both intra- and interpersonal factors could facilitate the emergence or intensification of psychopathological symptoms, which in turn might reflect in impaired daily functioning. This also applies to cyberchondria – a novel phenomenon on the verge

of hypochondria and obsessive-compulsive disorder, which refers to the escalation of health anxiety during compulsive online searches related to reassurance seeking.

Objective: The objectives of the study were: (1) to identify the prominent combinations of coping strategies, to compare them in terms of individual factors and psychopathological responses with particular attention paid to medical and non-medical workers, as well as to recognize the determinants of psychopathology in the study group in the midst of the SARS-CoV-2 pandemic, (2) to estimate the severity of health anxiety and cyberchondria in the study group along with sociodemographic, clinical and pandemic-related factors that correspond with their higher intensity, (3) to test if perceived social support and cyberchondria mediate the association between health anxiety and quality of life.

Material and methods: The study groups in all mentioned analyses were adult representatives of the internet users who were familiarized with the study description, agreed to fill out the questionnaires and sent them to the researchers online. The first study encompassed the analysis of data received from 1831 respondents. The study participants completed the Goldberg General Health Questionnaire (GHQ-28), the Impact of Event Scale - Revised (IES-R), the Coping Orientation to Problems Experienced questionnaire (MiniCOPE), and a sociodemographic survey. The second and third studies involved data collected from 538 participants who completed the Polish adaptation of the Cyberchondria Severity Scale (CSS-PL), the Short Health Anxiety Inventory (SHAI), The Quality of Life Scale (QOLS), Multidimensional Perceived Social Support Scale (Polish adaptation of the Multidimensional Perceived Social Support Scale; MSPSS) along with a sociodemographic questionnaire.

Results: (1) Cluster analysis allowed three clusters referring to the most frequently used combinations of coping strategies to emerge. Therefore, adaptive, maladaptive and non-specific clusters were included in the further analysis. Individuals using maladaptive coping strategies achieved significantly higher total and subscale scores of IES-R and GHQ-28 compared to the adaptive and non-specific clusters. This also applied to exceeding the cut-off point in the GHQ-28 significantly more often, which

were named positive scores. Significantly higher GHQ-28 total and positive scores, along with social dysfunction and severe depressive symptoms subscales scores, were observed in the non-specific cluster compared to the adaptive cluster. Utilizing the maladaptive combination of strategies in medical and non-medical workers group resulted in significantly higher total and subscales' scores GHQ-28 and IES-R when collated with the adaptive and non-specific clusters.

Among the health care workers clustered as adaptive, significantly lower total scores, and lower scores on the subscales examining somatic symptoms, social dysfunction and severe depressive symptoms were obtained when contrasted with the non-specific cluster. At the same time, medical workers in the adaptive cluster manifested psychopathological symptoms significantly more often than respondents with a medical background using non-specific strategies. Such observation was not made in the group of non-medical participants. Differences between IES-R total and subscales' scores were insignificant among medical and non-medical respondents using adaptive and non-specific strategies. Female gender determined higher total scores and all subscales' scores of GHQ-28 and IES-R subscales. Non-medical occupation determined lower total scores of the GHQ-28 as well as its subscales related to somatic symptoms, anxiety and insomnia. Having children, in turn, determined lower scores in GHQ-28 subscale concerning severe depressive symptoms. (2) Severe health anxiety and cyberchondria were found in almost one-third of respondents. Severe health anxiety and cyberchondria were found in 30.86% of the study participants. The crucial determinants of increased health anxiety and cyberchondria in the study group turned out to be professional inactivity, chronic mental illness, and subjective limitation of access to healthcare due to the SARS-CoV-2 pandemic. (3) Health anxiety significantly impacted the quality of life both directly and indirectly through low perceived social support. Perceived social support partially mediated the relationship between health anxiety and quality of life. Cyberchondria, on the other hand, did not have a significant and direct effect on the quality of life. Consequently,

cyberchondria did not mediate the association between health anxiety and quality of life.

Conclusions: (1) The presence of psychopathological manifestations, including symptoms of post-traumatic stress disorder, might be expected regardless of the used coping strategies combination. Therefore, to maintain the well-being of medical and non-medical workers adequate and evidence-based support is needed. (2) Factors determining increased health anxiety and cyberchondria correspond to areas particularly affected by the pandemic, such as employment stability, mental resilience, or access to medical services. (3) Cyberchondria, unlike health anxiety, does not significantly affect the quality of life. Strengthening perceived social support may reduce the adverse impact of health anxiety on quality of life.

3. Wstęp

3.1 Zdrowie w kontekście kryzysu epidemiologicznego

Śledząc dane literaturowe dotyczące kryzysów epidemiologicznych na przestrzeni ostatnich lat można dostrzec dość wyraźną zmianę dyskursu – oprócz *somy* dostrzeżono *psyche*. Poza oczywistym zagrożeniem stwarzanym przez patogen sam w sobie, epidemie i pandemie mogą nieść za sobą konieczność reorganizacji funkcjonowania społecznego, ograniczenia dostępu do edukacji, opieki zdrowotnej czy pracy zarobkowej, a nawet utrudniać zdobycie żywności (Paterson et al., 2021). Taylor et al. (2020) w badaniu angażującym ponad 65000 osób podczas lockdownu na początku 2020 roku odnotował, iż podczas gdy jedynie 2% badanych było zakażonych SARS-CoV-2, blisko 20% manifestowało nasilone objawy lękowe i depresyjne. Dodatkowo, wtórując za Verdery et al. (2020), psychologiczne reperkusje każdej śmierci w wyniku chorowania na COVID-19 bezpośrednio dotyczyły średnio dziewięciu osób. W istocie, kryzysy epidemiologiczne są także zjawiskami psychologicznym, które można rozpatrywać na wielu poziomach. Między innymi, czynniki psychologiczne leżą u podłoża umiejętności przystosowania się do zasad minimalizujących wpływ kryzysu (np. Bellato, 2020). Z drugiej zaś strony, mogą one

przyczynić się do pojawienia się szeregu objawów psychopatologicznych nie tylko w bezpośredniej reakcji na stresor (Esterwood et al., 2020), ale też w przyszłości. Według metaanalizy przeprowadzonej przez Lopez-Leon et al. (2021) wynika, że aż u 80% ozdrowieńców SARS-CoV-2 występuje przynajmniej jeden z ponad pięćdziesięciu zidentyfikowanych długotrwałych konsekwencji zdrowotnych. Pośród powikłań neuropsychiatrycznych wymienione zostały zaburzenia poznawcze takie jak deficyty uwagi, depresja i objawy lękowe, a także objawy zaburzenia obsesyjno-kompulsyjnego. Mao et al. (2022) w badaniu z udziałem 3705 respondentów zwraca natomiast uwagę, że objawy zespołu stresu pourazowego o różnym nasileniu po wybuchu pandemii SARS-CoV-2 występowały u 53,2% badanych. Obserwacja ta koresponduje z analizą długofalowych psychiatrycznych konsekwencji u osób zakażonych SARS, gdzie Mak et al. (2009**)** jako najczęstszą wskazał zespół stresu pourazowego, zaś na drugim miejscu plasowały się zaburzenia depresyjne.

Nie sposób nie wspomnieć również o jakości życia będącej odzwierciedleniem nie tylko stanu somatycznego, ale też psychologicznego, społecznego i środowiskowego (WHO, 1996). Jakość życia odgrywa także ważną rolę w interakcji między stresorem a czynnikami ochronnymi (Voruganti et al., 1998), a także może warunkować zdrowienie (Ma et al., 2020). Co istotne, uważa się, że uległa ona istotnemu obniżeniu w populacjach dotkniętych kryzysem związanym z COVID-19 (Melo-Oliveira et al., 2021). Hansel et al. (2022) nawiązując do Juster et al. (2010) tłumaczy to zjawisko przeciążeniem allostatycznym (ang. „allostatic load") w obliczu akumulacji powiązanych z pandemią stresorów.

Czerpiąc z doświadczenia z poprzednich kryzysów epidemiologicznych, szczególną uwagę należy zwrócić na pracowników medycznych (Straus et al., 2004; Martinese et al. 2009; Goulia et al., 2010; Walton et al., 2020). Dynamicznie zmieniające się rekomendacje, konieczność pracy pod ogromnym reżimem sanitarnym, lęk przed zarażeniem siebie oraz swoich najbliższych, a także konieczność opieki nad ciężko chorymi (Walton et al., 2020; Carmassi et al., 2020; Carmassi et al., 2021) równolegle z brakiem współpracy czy nawet agresją pacjentów w stosunku do personelu (Yasri,

2019) są często wskazywane w literaturze jako prominentne stresory w tej grupie zawodowej. Co więcej, niektórzy autorzy zwrócili uwagę na to, że silne napięcie psychiczne doświadczane przez współpracowników stanowiło dodatkowe obciążenie psychiczne dla medyków (Cai et al., 2020), a tendencja taka była obserwowana niezależnie od wieku. Nie stanowi więc zaskoczenia dość powszechne występowanie wśród pracowników ochrony zdrowia objawów zaburzeń nastroju, lęku, zaburzeń snu czy przeżywania dyskomfortu psychicznego (Lai et al., 2020) w czasie kryzysu związanego z SARS-CoV-2. Pracownicy ochrony zdrowia charakteryzowali się również częstszym występowaniem bezsenności oraz objawów lękowych i somatyzacyjnych w porównaniu do sektorów niemedycznych (Maciaszek et al., 2020).

Oprócz okoliczności związanych z miejscem i charakterem pracy, różnorodność odpowiedzi na czynnik stresowy można próbować tłumaczyć czynnikami intra- i interpersonalnymi cechującymi daną jednostkę.

3.2 Czynniki intra- i interpersonalne

Sytuacja stresu powoduje mobilizację personalnych oraz społecznych zasobów jednostki. Uwagę zwraca jednak znaczna różnorodność reakcji na podobny czynnik stresowy pośród poszczególnych osób. Może być ona interpretowana z uwzględnieniem transakcyjnego modelu stresu stworzonego przez Lazarus i Folkman (1984) zakładającego, że odpowiedź na stres warunkuje ocena poznawcza oraz wybór strategii radzenia sobie ze stresorem. Strategie radzenia sobie są przykładem czynników intrapersonalnych, czyli warunków wewnętrznych danej osoby. Obejmują one ogół podejmowanych wysiłków, zarówno poznawczych i behawioralnych, mających na celu utrzymanie lub rozwój osobistego dobrostanu. Strategie radzenia sobie można klasyfikować wielowymiarowo uwzględniając między innymi konfrontacyjność i unikanie, skupienie na emocjach lub problemie czy też strategie behawioralne i poznawcze (Daisuke et al., 2016). Z praktycznego punktu widzenia, zasadnicze zdaje się być jednak określenie czy dane strategie ogrywają rolę

adaptacyjną, nieadaptacyjną czy też ich używanie ma charakter neutralny (Skinner et al., 2003). Brak adaptacji może bowiem doprowadzić do ujawnienia się objawów psychopatologicznych. Co istotne, pod wpływem stresora utylizowany jest nie jeden, a pewna konfiguracja różnych sposobów radzenia sobie zarówno adaptacyjnych, jak i niesprzyjających adaptacji (np. Doron et al., 2013). Ostateczny charakter odpowiedzi jest więc niejako ich wypadkową. Dane literaturowe sugerują również, że selekcja stosowanych sposobów radzenia sobie może wiązać się z poprawą jakości życia zależnej od zdrowia lub przeciwnie, z dekompensacją w zakresie zdrowia – poprzez między innymi pojawienie się objawów lękowych (Falgares et al., 2019), objawów zespołu stresu pourazowego, depresją (Falgares et al., 2019) czy zaburzeniami snu (Palagini et al., 2016). Dowiedziono również, że nie bez znaczenia przy wyborze danej strategii są czynniki socjodemograficzne takie jak, między innymi, wiek, płeć (Asturias et al., 2021).

Próba dostosowania się do zmieniających się warunków może realizować się w relacjach międzyludzkich poprzez wsparcie społeczne. Należy ono do czynników interpersonalnych. Szczególny jego rodzaj, spostrzegane wsparcie społeczne, określa w jaki sposób oceniane jest wsparcie emocjonalne i materialne otrzymywane od rodziny, przyjaciół oraz osób znaczących, a także w jaki sposób rezonuje ono z poczuciem własnej wartości. Istotnie, spostrzegane wsparcie społeczne może mieć większe znaczenie w kontekście utrzymania dobrostanu psychicznego niż to otrzymywane w istocie. W czasie pandemii kluczowe znaczenie kontynuacji interakcji społecznych, pomimo restrykcji epidemiologicznych, znalazło swoje odzwierciedlenie w dbałości o nomenklaturę. Wielu autorów sugerowało, aby terminy „izolacja społeczna" czy „dystans społeczny" zastąpić „izolacją" bądź „dystansem fizycznym" (Gupta & Dhamija, 2020; Douglas et al., 2020). Uważa się, że spostrzegane wsparcie społeczne wiąże się z różną intensywnością objawów depresyjnych, lękowych czy też manifestacją zaburzenia obsesyjno-kompulsyjnego i zespołu stresu pourazowego (Feber et al., 2022). Saltzman et al. (2020) odnosząc się do literatury analizującej wpływ wsparcia społecznego w obliczu wojen (Hall et al., 2010; Saltzman

et al., 2017) czy trzęsienia ziemi (Xu & Ou, 2014) podsumował, że wsparcie społeczne jest silnym predyktorem prężności psychicznej oraz wzrostu potraumatycznego. Sugeruje to z kolei jego ważną i pozytywna rolę w minimalizowaniu potencjalnych negatywnych i długoterminowych skutków kryzysu psychicznego związanego z pandemią SARS-CoV-2. Relacje pomiędzy spostrzeganym wsparciem społecznym, a specyficznym rodzajem lęku, lękiem o zdrowie, nie zostały jednak dotychczas szeroko zbadane.

3.3 Specyfika pandemii SARS-CoV-2 – znaczenie internetu

Pandemia SARS-CoV-2 okazała się być pod wieloma względami bezprecedensowa. Ogromną rolę w procesie zarządzania kryzysem bez wątpienia odegrał internet. Wzrost wykorzystania serwisów internetowych szacowany jest od 40% do 100% w porównaniu do okresów poprzedzających powszechną izolację ze względów epidemicznych (Pandey et al., 2020; Branscombe, 2020). Stał się on nie tylko przestrzenią świadczenia usług, w tym usług medycznych, ale też stanowił powszechnie dostępny kanał komunikacji między lokalnymi, państwowymi, a także światowymi instytucjami zajmującymi się zdrowiem. Równolegle odnotowano znacznie zwiększoną aktywność użytkowników mediów społecznościowych, którzy chętnie dzielili się nierzadko silnie nacechowanymi i nie zawsze zgodnymi z aktualną wiedzą medyczną nowinkami (Joseph et al., 2022). Dotyczyły one zasadniczych aspektów pandemii takich jak sposoby transmisji, śmiertelność wirusa, restrykcje mające ograniczyć zagrożenie, leczenie, pochodzenie choroby czy przemoc (Islam et al., 2020). Nasilenie powstałego szumu informacyjnego powstałego wokół pandemii stało się tak prominentne, że ogłoszono paralelną epidemię zwaną „infodemią" (WHO, 2020) mającą realny wpływ na rozwinięcie się objawów psychopatologicznych (Torales et al., 2022), w tym zwiększenie liczby samobójstw (Shoib et al., 2022).

3.4 Lęk o zdrowie i cyberchondria

Lęk o zdrowie odnosi się do przewlekłego, przesadnego oraz nieuzasadnionego lęku przed możliwą, najczęściej poważną, chorobą. Stanowi on pewne kontinuum od jego niemal braku do znacznego nasilenia. Nierzadko towarzyszą mu wtedy inne objawy ze spektrum lęku, w tym zaburzenia obsesyjno-kompulsyjne czy zaburzenia pod postacią somatyczną. Udowodniono, że lęk o zdrowie może potencjalnie zaburzać codzienne funkcjonowanie (van den Heuvel et al., 2014), wiązać się z nadużywaniem usług ochrony zdrowia (Norbye et al., 2022) czy też skłaniać do nadmiarowego poszukiwanie informacji na temat zdrowia w internecie (te Poel et al., 2016). Zjawisko polegające na nadmiarowym, uporczywym i motywowanym lękiem o zdrowie poszukiwaniu informacji na temat zdrowia, które wiąże się z utrzymującym lub nawet zwiększonym poziomem lęku nazywa się cyberchondrią (Starcevic et al., 2013; Brown et al. 2020). Dotychczas nie ustalono jednoznacznie, czy lęk o zdrowie stanowi punkt wyjściowy do rozwinięcia cyberchondrii czy też cyberchondria jest czynnikiem amplifikującym i podtrzymujący lęk o zdrowie. Niewykluczone, że relacja między tymi zjawiskami ma charakter cyrkularny. Uważa się jednak, że oba konstrukty, choć istotnie ze sobą powiązane, powinny zostać traktowane jako osobne fenomeny ze względu na unikalne konsekwencje wiążące się z cyberchondrią (Mathes et al., 2018; Akgul & Ergin, 2021). Rozważania na temat cyberchondrii utrudnia dodatkowo fakt, że nie jest ona uwzględniona w obowiązujących klasyfikacjach chorób. Należy jednak podkreślić zmianę klasyfikacyjną hipochondrii w Międzynarodowej Klasyfikacji Chorób i Problemów Zdrowotnych ICD-11 – zamiast figurować jako zaburzenie somatoformiczne, zostanie ona notowana w grupie „zaburzeń obsesyjno-kompulsyjnych i pokrewnych" z uwagi na kompulsyjną naturę i rolę negatywnego wzmocnienia.

4.Cel i założenia pracy

Pierwszy artykuł miał na celu określenie najbardziej charakterystycznych konfiguracji radzenia sobie pośród osób aktywnych zawodowo, identyfikację czynników indywidualnych i objawów psychopatologicznych różniących poszczególne łączone strategie radzenia sobie oraz porównanie nasilenia objawów psychopatologicznych, również tych właściwych zespołowi stresu pourazowego, w zależności od stosowanych strategii radzenia sobie w czasie pandemii SARS-CoV-2 u pracowników sektora medycznego oraz niemedycznego. Określono także zasadnicze determinanty psychopatologii w grupie badanej.

Celem drugiego artykułu było oszacowanie nasilenia lęku o zdrowie i cyberchondrii w grupie badanej oraz określenie czynników socjodemograficznych, klinicznych, a także związanych z pandemią korespondujących z bardziej nasilonym ich obrazem.

W trzecim artykule sprawdzono czy spostrzegane wsparcie społeczne i cyberchondria mediują związek między lękiem o zdrowie oraz jakością życia.

5.Materiał i metoda badań

5.1.Uczestnicy badań

Materiał będący podstawą prezentowanego cyklu publikacji został zebrany z wykorzystaniem techniki wspomaganego komputerowo wywiadu z użyciem formularzy internetowych CAWI (ang. Computer-assisted web interviewing). Metoda ta pozwala na dotarcie do dużej grupy różnorodnych odbiorców, którzy ze względu na wygodę dostępu do formularzy oraz poczucie anonimowości, chętniej udzielają informacji, także tych dotyczących tematów wrażliwych. Z uwagi na przekrojowy charakter badań oraz targetowanie przedstawicieli populacji ogólnej, we wszystkich badaniach zastosowano metodę kuli śnieżnej (ang. Snowball sampling).

Uczestnicy zostali poinformowani o dobrowolnym oraz anonimowym charakterze badania, możliwości rezygnacji w dowolnym momencie wypełniania formularza, a także braku negatywnych konsekwencji wynikających z udziału w nim. Informacje

te zostały zawarte w opisie badania. Wysłanie formularza uznawane zostało jako potwierdzenie pełnoletności, zapoznania się z opisem i celem badania, a także wyrażenie zgody na udział. Jedynie kompletne formularze zostały włączone do dalszych analiz.

Projekty badań uzyskały aprobatę Komisji Bioetycznej przy Uniwersytecie Medycznym we Wrocławiu (zgoda nr 188/2020 dla pierwszego badania oraz zgoda nr 286/2020 dla drugiego oraz trzeciego badania) i zostały przeprowadzone w zgodnie z zasadami Deklaracji Helsińskiej.

Pierwsze badanie zostało oparte na danych zebranych w okresie od 16 marca 2020 do 26 kwietnia 2020. Ankietę udostępniono w internecie 12 dni po potwierdzeniu pierwszego przypadku zakażenia SARS-CoV-2 w Polsce, który zapoczątkował powszechne testowanie podejrzanych o zakażenie, a także był przyczynkiem wprowadzenia pierwszych restrykcji mających na celu ograniczenie rozprzestrzeniania się wirusa (Pinkas et al., 2020). O wypełnienie formularzy poproszono osoby aktywne zawodowo reprezentujące zawody medyczne oraz niemedyczne. Na potrzeby badania do zawodów medycznych zakwalifikowano lekarzy, pielęgniarki, ratowników medycznych, farmaceutów, fizjoterapeutów, terapeutów zajęciowych, psychologów, a także pracowników technicznych. oraz administracyjnych bezpośrednio związanych z opieką zdrowotną.

Drugie oraz trzecie badanie zostało przeprowadzone z wykorzystaniem danych zebranych pomiędzy 16 maja a 29 grudnia 2020 roku. Ich koncepcja została zainspirowana dynamicznie zmieniającą się sytuacją epidemiologiczną oraz przeniesieniem życia towarzyskiego, pracy i świadczenia usług, w tym tych medycznych, do przestrzeni internetowej.

5.2.Wykorzystane narzędzia

W pierwszym badaniu wykorzystano standardowe narzędzia psychometryczne takie jak: polska adaptacja Ogólnego Kwestionariusza Zdrowia-28 (General Health Questionnaire, GHQ-28), kwestionariusz MiniCOPE oraz polska wersja

Zrewidowanej Skali Wpływu Zdarzeń (The Impact of Event Scale – Revised, IES-R**.** Dodatkowo, respondenci wypełnili autorski kwestionariusz socjodemograficzny.

A. Ogólny Kwestionariusz Zdrowia-28 (GHQ-28) składa się z 28 elementów podzielonych na cztery podskale w zależności od badanej grupy objawów - objawy somatyczne (itemy 1, 3, 4, 8, 12, 14 i 16), lęk i bezsenność (itemy 2, 7, 9, 13, 15, 17 i 18), dysfunkcja społeczna (itemy 5, 10, 11, 25, 26, 27 i 28) oraz nasilone objawy depresyjne (itemy 6, 19, 20, 21, 22, 23 i 24) (Goldberg et al., 1979; Makowska et al., 2002). Możliwe do udzielenia odpowiedzi umieszczone są na czteropunktowej skali Likerta, z następującą interpretacją: 0 — wcale, 1 — nie więcej niż zwykle, 2 — raczej więcej niż zwykle i 3 — dużo więcej niż zwykle. Wynik całkowity mieści się w przedziale od 0 do 84 z punktem odcięcia na poziomie 24 punktów. Im wyższy jest uzyskany wynik, tym bardziej nasilone są badane objawy.
B. Kwestionariusz MiniCOPE składa się z 28 elementów uporządkowanych w 14 podskal umożliwiających identyfikację używanych strategii radzenia sobie w sytuacji zagrożenia (Juczyński & Ogińska-Bulik, 2010). Respondenci proszeni są o wybór najbardziej adekwatnej z odpowiedzi w czteropunktowej skali Likerta, gdzie: 0 – nigdy tego nie robię, 1 – rzadko to robię, 2 – często to robię, 3 – prawie zawsze to robię. Podskale obejmują aktywne radzenie sobie (itemy 2 i 7), planowanie (itemy 14, 25), pozytywne przewartościowanie (itemy 12 i 17), akceptację (itemy 20 i 24), poczucie humoru (itemy 18 i 28), zwrot ku religii (itemy 22 i 27), poszukiwanie wsparcia emocjonalnego (itemy 5 i 15), poszukiwanie wsparcia instrumentalnego (itemy 10 i 23), zajmowanie się czymś innym (itemy 1 i 19), zaprzeczenie (itemy 3 i 8), wyładowanie (itemy 9 i 21), zażywanie substancji psychoaktywnych (itemy 4 i 11), zaprzestanie działań (itemy 6 i 16), a także obwinianie siebie (itemy 13 i 26). Możliwa do uzyskania w każdej podskali punktacja waha się między 0 a 3, gdzie im wyższy wynik, tym częstsza jest utylizacja danego sposobu radzenia sobie pod wpływem stresora.

C. Polska adaptacja Zrewidowanej Skali Wpływu Zdarzeń (The Impact of Event Scale – Revised, IES-R) (Juczyński & Ogińska-Bulik, 2009) na podstawie Weiss & Marmar (1997) zawiera 22 itemów przyporządkowanych do trzech podskal: intruzji (itemy 1, 2, 3, 6, 9, 14, 16, 200, nadmiernego pobudzenia (itemy 4, 10, 2, 15, 18, 19, 21) oraz unikania (itemy 5, 7, 8, 11, 13, 17, 22). Selekcja odpowiedzi na pięciopunktowej skali Likerta umożliwia wybór od 0 – w ogóle nie, do 5 - zdecydowanie tak. Nie ustalono punktu odcięcia, jednak Juczyński & Ogińska-Bulik (2009) postulują takowy między 30 a 33 punktami. Innymi słowy, uzyskanie 30 i więcej punktów może sugerować rozwinięcie się objawów zespołu stresu pourazowego w reakcji na stresor traumatyczny.
D. Autorski kwestionariusz socjodemograficzny zawierający informację o płci, wieku, miejscu zamieszkania, statusie związku, posiadaniu dzieci, opiece nad osobą starszą lub niepełnosprawną, wykonywanym zawodzie, stażu pracy oraz liczbie godzin przepracowywanych na przestrzeni tygodnia.

W drugim badaniu użyto polskie adaptacje Inwentarza lęku o zdrowie (Short Health Anxiety Inventory, SHAI) oraz kwestionariusza CSS (Cyberchondria Severity Scale, CSS-PL). Dane te zostały uzupełnione o autorski kwestionariusze socjodemograficzne.

E. Polska adaptacja Inwentarza lęku o zdrowie (Short Health Anxiety Inventory, SHAI) (Salkovskis et al., 2002; Kocjan, 2016) składa się z 16 elementów, które eksplorują dwie główne płaszczyzny hipochondrii – prawdopodobieństwo choroby (Illness likelihood, IL) oraz negatywne konsekwencje choroby (negative consequences of an illness, NC). Na każdy z elementów składają się cztery stwierdzenia, gdzie pierwsza odnosi się do braku odczuwanych objawów (0 punktów), druga do łagodnych objawów (1 punkt), trzecia do nasilonych objawów (2 punkty), zaś czwarta do bardzo nasilonych objawów hipochondrii (3 punkty). Ankietowani proszeni byli o wybranie jednego ze stwierdzeń najlepiej opisujących ich doświadczenie z ostatnich 6 miesięcy. Wynik ogólny można rozumieć jako sumę punktów uzyskanych ze wszystkich

odpowiedzi. W polskiej adaptacji za optymalny punkt odcięcia przyjęto 20 punktów (Kocjan, 2016).

F. Kwestionariusz CSS-PL (Bajcar et al., 2019) będący polską adaptacją pracy McElroy & Shevlin (2014) zawiera 33 elementów, które pozwalają na kompleksową ocenę zjawiska cyberchondrii. Elementy zorganizowane są w 5 podskal: kompulsywność (elementy 3, 6, 8, 12, 14, 17, 24, 25), stres (elementy 5, 7, 10, 20, 22, 23, 29, 31), nadmierność (elementy 1, 2, 11, 13, 18, 19, 21, 30), upewnianie się (elementy 4, 15, 16, 26, 27, 32), nieufność (elementy 9, 28, 33). Odpowiedzi ułożone są na pięciostopniowej skali Likerta, gdzie 1 – nigdy, zaś 5 – zawsze. Odpowiedzi z podskali nieufność liczone są według klucza odwróconego. Wynik ogólny to suma punktów ze wszystkich podskal z założeniem, że im wyższy jest wynik, tym intensywniejsze są objawy. Nie ustalono punktu odcięcia. Z uwagi na dane literaturowe sugerujące słabą korelację podskali nieufność w odniesieniu do cyberchondrii, sugerując jej znaczenie jedynie w uzupełnieniu teoretycznego konceptu (Von Elm et al., 2007; Fergus, 2014; Bajcar & Babiak, 2019) zrezygnowano z analizy tej podskali na potrzeby przeprowadzonych badań.

G. Kwestionariusz socjodemograficzny wykorzystany w drugim badaniu zawierał 14 pytań zamkniętych jednokrotnego wyboru oraz dwa pytania w których respondenci mieli oszacować liczbę interakcji z psychiatryczną i psychologiczną opieką zdrowotną oraz innymi jej rodzajami. Zebrane zostały informacje dotyczące wieku, płci, wykształcenia, aktywności zawodowej i pracy zdalnej, miejsca zamieszkania, liczby współlokatorów, zaangażowania w życie społeczne oraz czasu spędzonego korzystając z internetu. Załączono również pytania dotyczące pandemii skupiające się na okolicznościach życiowych takich jak utrata pracy z powodu pandemii czy zaufanie do informacji dotyczących SARS-CoV-2 znalezionych w internecie. Kwestionariusz miał na celu odzwierciedlenie subiektywnych opinii ankietowanych.

Przeprowadzenie trzeciego badania, oprócz polskiej adaptacji Inwentarza lęku o zdrowie (Short Health Anxiety Inventory, SHAI) oraz kwestionariusza CSS (Cyberchondria Severity Scale, CSS-PL), wymagało wykorzystania polskiej adaptacji Wielowymiarowej Skali Spostrzeganego Wsparcia Społecznego (Multidimensional Scale of Perceived Social Support, MSPSS), a także Skali Jakości Życia (The Quality of Life Scale, the QOLS). W analizach uwzględniono także informacje o wieku, płci oraz wykształceniu ankietowanych.

H. Wielowymiarowa Skali Spostrzeganego Wsparcia Społecznego (Multidimensional Scale of Perceived Social Support, MSPSS) (Buszman & Przybyła-Basista, 2017) zawiera 12 elementów eksplorujących spostrzegane wsparcie społeczne od przyjaciół, rodziny oraz osób znaczących. Odpowiedzi uporządkowane są na siedmiostopniowej skali Likerta na spektrum od 1 - zdecydowanie się nie zgadzam do 7 - zdecydowanie się zgadzam. Wynik może być obliczony dla każdej ze podskal lub zsumowany dla całej skali. Im wyższy jest wynik, tym większe jest spostrzegane wsparcie społeczne.

I. Polska adaptacja Skali Jakości Życia (The Quality of Life Scale, the QOLS) (Burckhardt & Anderson, 2003) bazująca na pracy Johna Flanagana (Flanagan, 1978; Flanagan 1982) składa się z 16 elementów, które pozwalają na ocenę jakości życia w dość szerokim kontekście, gdyż eksplorują 5 kategorii: dobrostan fizyczny i materialny (itemy 1 i 2), relacje z innymi ludźmi (itemy 3,4, 5, 6), aktywność społeczna i obywatelska (itemy 7 i 8), rozwój i spełnienie osobiste (itemy 9, 10, 11, 12), a także rekreację (itemy 13, 14, 15, 16). Proponowane odpowiedzi rozmieszczone są na siedmiostopniowej skali Likerta od 0 - bardzo niezadowolony, do 7 – bardzo zadowolony. Uzyskane punkty są sumowane, zatem wyniki respondentów można umieścić na spektrum od 16 do 112, gdzie im wyższy jest wynik, tym lepsza jakość życia. Dla zdrowej populacji punkt odcięcia został ustalony na poziomie 90 punktów.

5.3 Analiza statystyczna

5.3.1 Pierwsze badanie

Analiza statystyczna w pierwszym badaniu została wykonana w kilku etapach. Analiza skupień metodą k-średnich umożliwiła podział grupy 2038 respondentów na trzy klastry w zależności od wykorzystywanych strategii radzenia sobie. Nie analizowano formularzy uzyskanych od 207 osób nieaktywnych zawodowo oraz bezrobotnych ze względu na niedostateczną reprezentację tej grupy. Tym samym, wyniki 1831 pracujących respondentów reprezentujących zarówno sektor medyczny, jak i niemedyczny zostały włączone do dalszych analiz. Konfiguracje stosowanych przez ankietowanych strategii radzenia sobie zostały porównane z użyciem testu U Manna-Whitneya. Do analizy post-hoc wykorzystano natomiast metodę Holma-Bonferroniego. Analiza kowariancji (ANCOVA) umożliwiła kontrolę ewentualnego wpływu zmiennych zakłócających płci i wieku. Wyniki całkowite oraz poszczególnych subskal skal GHQ-28 oraz IES-R zostały obliczone dla każdego zidentyfikowanego klastra. Do ich porównania użyto testu sumy rang Kruskala-Wallisa (zmienne ciągłe) oraz testu chi-kwadrat (zmienne kategoryczne). Analiza post-hoc uwzględniała wykorzystanie metody Holma-Bonferroniego.

Kolejnym etapem analizy było porównanie wyników skal GHQ-28 i IES-R między pracownikami medycznymi i niemedycznymi, do czego wykorzystano test U Manna-Whitneya (zmienne ciągłe) oraz test chi-kwadrat (zmienne kategorialne). Wpływ płci i wieku na wyniki GHQ-28 i IES-R został testowane za pomocą analizy kowariancji (ANCOVA), zaś metoda Holma-Bonferroniego została użyta w analizie post-hoc. Istotne różnice między klastrami w kontekście pozytywnych wyników GHQ-28 świadczących o pojawieniu się objawów psychopatologicznych zostały zidentyfikowane przy użyciu modelu regresji logistycznej. Kluczowe determinanty wystąpienia objawów psychopatologicznych mierzonych za pomocą GHQ-28 i IES-R w analizowanej grupie zostały zidentyfikowany poprzez przeprowadzenie regresji najlepszych podzbiorów (ang. best subsets regression). Zmienne, które istotnie różnicowały powstałe klastry zostały włączone do dalszych analiz. Następnie

oszacowano współczynnik wariancji inflacji (VIF). W kolejnym kroku wybrane przy użyciu Bayesowskiego kryterium informacyjnego Schwarza modele zostały uśrednione.

Wymienione czynności przeprowadzono z wykorzystaniem programu R (wersja 3.6) z pakietami psych, car oraz MuMIN. Do analizy mocy wyniku całkowitego GHQ-28 użyto oprogramowanie G∗Power (3.1.9.6). Uzyskane wyniki uznawano za istotne, jeśli wartość p wynosiła <0,05.

5.3.2 Drugie badanie

Analiza statystyczna w drugim badaniu zakładała podzielenie respondentów na dwie grupy w zależności od uzyskanych wyników w skalach CSS-PL oraz SHAI, a także punktów odcięcia ustalonych za pomocą analizy skupień k-średnich. Uwzględniając niewystarczającą reprezentację ankietowanych z wykształceniem podstawowym oraz średnim, zostały one włączone do wspólnej grupy (w badaniu określone jako „lower educated"). Różnice międzygrupowe w zmiennych ciągłych testowano testem U Manna–Whitneya ze względu na rozkład nienormalny, który określono za pomocą testu Kołmogorowa-Smirnowa. Test chi-kwadrat użyto do porównania rozkładu zmiennych kategorycznych, natomiast binarna analiza regresji logistycznej umożliwiła określenie istotnych relacji w testach dwuwymiarowych. Przynależność do danego klastra uznana została jako zmienna zależna. Poziom istotności ustalono na $p < 0,05$. Wszystkie analizy zostały wykonane wykonano za pomocą Statistical Package for Social Sciences, wersja 20 (SPSS Inc., Chicago, IL, USA) (Nie et al., 1970).

5.3.3 Trzecie badanie

Zależności liniowe między zmiennymi ilościowymi określono za pomocą dwustronnej korelacji Pearsona, zaś analiza normalności rozkładu została wykonana z użyciem testu Kołmogorowa-Smirnowa. Wyniki analiz dwuwymiarowych uznawano za istotne, jeśli wartość p wynosiła <0,05. Do testowania modeli mediacji równoległych wykorzystano makro PROCESS (Hayes, 2013).

Na potrzeby trzeciego badania przeprowadzono analizę mediacji uwzględniającą bezpośredni wpływ lęku o zdrowie na cyberchondrię (a1), spostrzegane wsparcie społeczne (a2) oraz jakość życia (c). Zbadano także efekt jaki cyberchondria (b1) oraz spostrzegane wsparcie społeczne (b2) miały na jakość życia. Sprawdzono pośredni efekt lęku o zdrowie na jakość życia poprzez cyberchondrię (a1b1), a także postrzegane wsparcie społeczne (a2b2). Innymi słowy, lęk o zdrowie stanowił zmienną niezależną, zaś jakość życia zmienną zależną. Tym samym cyberchondria jak i spostrzegane wsparcie społeczne uwzględnione były w charakterze mediatorów. Do analizy włączono także informacje o wieku, płci i wykształcenia uczestników badania jako współzmienne.

Podobnie jak w przypadku poprzedniego badania, wszystkie analizy wykonano za pomocą Statistical Package for Social Sciences, wersja 20 (SPSS Inc., Chicago, IL, USA) (Nie, 1970).

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Coping Strategies and Psychopathological Responses Among Medical and Non-medical Professionals – a Cross-Sectional Online Survey

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Background: The SARS-CoV-2 pandemic was announced on March 11th, 2020, due to a surge of newly confirmed cases that significantly impacted populations worldwide, both directly and indirectly. Based on past epidemics research, the mental health implications of introduced restrictions should be expected and adequately addressed irrespective of the practiced profession.

Objective: The study aimed to explore psychopathological responses, including post-traumatic stress disorder (PTSD), concerning coping strategy clusters during the COVID-19 pandemic among medical and non-medical workers.

Methods: A cross-sectional web survey of the general population of internet users was performed from March 16th to April 26th, 2020, in Poland during the first peak of COVID-19 cases. A sample of 1,831 professionally active respondents, 64.0% of which pursuing a medical career, filled out General Health Questionnaire-28 (GHQ-28), The Impact of Event Scale-Revised (IES-R), and MiniCOPE, along with the socio-demographic questionnaire exploring personal as well as the work-related possibility of direct exposure to contagion and availability of proper protection, contact with the infected without accurate protective measures as well as the adequacy of workers when compared settings.

Results: Individuals labeled with specific clusters had significantly different psychopathological manifestations. Irrespective of performed job maladaptive cluster was associated with significantly higher GHQ-28 and IES-R scores on total subscales and all subscales compared to those representing the non-specific and adaptive cluster. Similar findings were observed concerning the frequency of the GHQ-28 positive score. Moreover, the non-specific cluster was associated with significantly higher GHQ-28 total scores among medical professionals. However, GHQ-28 positive scores were significantly more frequent in medical workers using adaptive clusters when compared to non-specific. Such relations were not observed in the non-medical group.

IES-R total and subscales' scores did not significantly vary within medical and non-medical groups when adaptive and non-specific clusters were compared. Pursuing

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a non-medical career was found to be a determinant of lower scores, while female sex was observed to be determinant of higher scores in both GHQ-28 and IES-R scales.

Conclusions: Positive screening for psychopathological and PTSD symptoms was expected regardless of the analyzed groups' coping strategies. Given the dramatically developing situation of the COVID-19 pandemic, support initiatives grounded in research evidence may be essential for maintaining the mental well-being and resilience of both the medical and non-medical workforce.

Keywords: mental health, pandemic, COVID-19, psychopathology, PTSD, coping strategies, healthcare workers

INTRODUCTION

In mid-December 2019, the novel coronavirus disease (COVID-19) was described in Wuhan, China, due to the SARS-CoV-2 contagion. A rapid spread of the virus facilitated by globalization resulted in WHO's pandemic declaration on March 11th 2020. As of October 27th, 43 million cases were reported globally, with a mortality rate exceeding one million (1). In spite of the constitution of a newly discovered coronavirus global health emergency shifted scientists' attention to defining clinical picture and developing treatment as well as prophylaxis, so far, accumulated knowledge is rather fragmentary. Although knowledge of emotional responses to the COVID-19 pandemic remains scarce, there is no doubt that the resilience of diverse communities worldwide was considerably challenged both directly and indirectly. Among a wide range of reported manifestations, there are depression, insomnia, anxiety, fear, anger, confusion, or post-traumatic stress symptoms, along with considerable disruptions of everyday routine and stigmatization (2–6). The reported manifestations are not COVID-19 specific.

The outbreak of SARS was regarded as a mental health catastrophe (7). PTSD was the most prevalent long-term psychiatric condition, followed by depressive disorder (8). In a cross-sectional study on a general population, Sim et al. (9), found significant rates of SARS-related psychiatric and post-traumatic comorbidities (22.9 and 25.8%, respectively) 16 weeks after the first local outbreak of SARS in Singapore. They found that psychiatric morbidity was associated with a high level of post-traumatic symptoms and was associated with the increased use of denial and planning as coping measures (9). An online survey addressed to the general population in China at the turn of January and February 2020 showed that most respondents, the majority were women of younger age groups (24–30.8 years of age); described the immediate impact of the Covid-19 epidemic as moderate to severe; more than a quarter declared severe anxiety while 16.5% suffered severe depressive signs (10). In a cross-sectional study in China, demographic data and mental health measurements from 1,257 health care workers were collected. The survey revealed a high prevalence of mental health symptoms among health care workers treating patients with COVID-19. A considerable number of participants had symptoms of depression (634, 50.4%), anxiety (560, 44.6%), insomnia (427, 34.0%), and distress (899, 71.5%). Lai et al. (11) indicated that being a woman and having an intermediate technical title were associated with experiencing severe depression, anxiety, and distress (11). Li et al. (12) also found that although no significant differences were observed between the severity of vicarious traumatization in the non-front-line nurses and the general public, its severity was significantly higher than that of the front-line nurses in close contact with patients with COVID-19 Maciaszek et al. (13) based on a national survey in Poland, aimed to compare psychopathological expressions during the COVID-19 pandemic in medical and non-medical professionals. Out of 2,039 participants, 1,216 (59.6%) individuals represented medical professions while 823 (40.4%) pursued non-medical occupations. Regardless of career, the vast majority of respondents were women (80.0% among medical professionals and 74.4% among non-medical professionals). They found the prevalence of anxiety, insomnia, and somatic symptoms among medical professionals were higher than in non-medical workers. Also, the determinants of psychopathological expressions in these two groups differ in terms of age, care for an elderly or disabled person, contact with COVID-19 at work, and contact with COVID-19 without protection measures (13).

Among the most prominent challenges medical professionals face amid the pandemic are fear of erratic recommendations, working overtime, fear of infection, passing it on family members, using personal protective equipment, and treating fellow workers and critically ill patients (14–16). A consistent pattern of a detrimental impact on the medical staff's psychological and physical well-being was already discussed concerning past outbreaks (14, 17–19). The considerable job-specific hardship put on medical workers during a possible epidemic was emphasized in an Australian study by Martinese et al. (2009) (19). Their study explored work attitudes to two hypothetical influenza scenarios: (a) a single patient admitted with avian influenza; and (b) multiple patients admitted with a new strain of human influenza during a pandemic. The results indicate the majority of respondents, primarily female (two-thirds), aged between 21 and 50 years (three-quarters), and nurses (44%), would not show up for work unless adequate vaccination or antiviral drugs were available at hand undeterred of accessibility of necessary preventive measures. Joob et al. (2020) (20), citing a study by Yasri et al. (2020) (21) underline aggressive attitude toward doctors, such as frequent direct verbal

insults or intentional coughing at medical staff in Thailand. As the authors point out, such behavior was not previously observed and might be attributed to the coronavirus outbreak because people are under much stress during a crisis. Additionally, Li et al. (12) highlight the vicarious traumatization of health care workers with no direct exposure to SARS-CoV-2 mirrors levels observed in the general population and consequently affects their everyday work under the extraordinary pressure of the epidemiological crisis (11). Moreover (20), in a study where the majority of participants were between the ages of 18 – 30 years (42.4%) and 31 – 40 years (60.7%), described that working with stressed colleagues provides additional psychological stress in medical respondents irrespective of age (22).

Considering the magnitude of distress and social repercussions of past outbreaks, psychological problems should be expected (23) and appropriately addressed to enhance public health response (24). The great variety of responses and their moderators should be considered mitigating the outbreak's impact. One of the essential factors that may impact individual responses to the outbreak related to stress are coping strategies. To a certain degree, one's performance in the face of stress relates to used coping strategies that may boost not only the health-related quality of life (25) but also impact the prevalence of anxiety and depression (26), insomnia (27), or post-traumatic stress disorder (28). Based on the definition created by Lazarus et al. (29) coping combines both cognitive and behavioral attempts to manage internal and external requirements related to an incredibly stressful event. As Doron et al. (30) point out, many studies investigating the relationships between cognitive coping and mental health adopt a dichotomous coping view. Such a dichotomous approach has strengths and weaknesses. However, as others have identified, instead of focusing on a single coping strategy examining cognitive and behavioral coping strategies in terms of "profiles" that exist across individuals using cluster analytical procedures might be a better approach (30–33). The multidimensional nature of coping has already been used in different contexts (34, 35) and showed that clustering coping actions into categories and thus creating coping strategy clusters reflects actual psychological outcome more adequately as one can use more than one coping strategy as well as combine adaptive and maladaptive strategies at once. In line with the theory proposed by Lazarus and Folkman (29) mentioned above, we wanted to find out the relationship between peoples coping strategies in relation to stressful events such as Covid-19 pandemic. Therefore, the primary aim of this study was to explore the following research questions:

- What are the most prominent combinations of coping strategies in the professionally active group during the pandemic?
- What individual factors and psychopathological symptoms differentiate the coping strategy clusters among the study sample?
- What is the difference in relations between coping strategies clusters and the severity as well as the prevalence of psychopathological symptoms in medical and non-medical groups?
- What are the key determinants of the psychopathological symptoms in the analyzed group?

MATERIALS AND METHODS

Recruitment

Information was collected through the cross-sectional online survey available to the participants between March 16th, 2020, and April 26th, 2020, in Poland. The survey was made available to the public 12 days after confirmation of the first case of the SARS-CoV-2 contagion and included the sudden surge in COVID-19 cases followed by subsequent restrictions to curb the epidemic (36). The snowball sampling method was used to recruit adult representatives of both medical and non-medical professions through social media and email addresses. The survey was posted on social media groups, forums, and websites, both health-related and not. Researchers used their social backgrounds to distribute the survey among their medical and non-medical friends and families to a lesser extent. The healthcare professionals included doctors, nurses, paramedics, and allied medical workers such as pharmacists, physiotherapists, occupational therapists, psychologists, technicians, and administrators. Only wholly filled questionnaires met the inclusion criteria for the analysis. Consent for participation and record of sent data was required. Respondents were informed that the study is entirely voluntary, anonymous and not participating will not negatively affect them. This information was stated in the box before the questionnaire. They were also allowed to stop participating and were assured that the researchers would maintain the records' confidentiality. Submitting a filled questionnaire indicated that respondents had read the study's goal and description, reached adulthood, and agreed to the terms described and participation in the research. The Ethics Committee approved the study protocol at Wroclaw Medical University, Poland (approval number: 188/2020). The study was performed by the principles of the Declaration of Helsinki.

Measures

General Health Questionnaire-28 (GHQ-28)

The prevalence of psychopathological symptoms was measured with a 28-item General Health Questionnaire-28 (GHQ-28) including four subscales: somatic symptoms (items 1, 3, 4, 8, 12, 14, 16), anxiety and insomnia (items 2, 7, 9, 13, 15, 17, 18), social dysfunction (items 5, 10, 11, 25, 26, 27, 28) as well as severe depression (items 6, 19, 20, 21, 22, 23, 24). The scope of possible answers incorporates a 4-point Likert scale (0 – not at all, 1 – no more than usual, 2 – rather more than usual, 3 – much more than usual). The range of possible outcomes extends from 0 to 84, with higher scores indicating higher levels of distress. The cut-off score for clinically relevant symptoms was set at 24 points (37) and thus outcomes exceeding this score were labeled as positive GHQ-28. According to Makowska et al. (38), the GHQ-28 Cronbach's alpha was estimated at 0.93 when the Polish version was used and it was evaluated to be 0.94 in the current sample.

MiniCOPE

Coping strategies when approaching threatening situations were measured using a 28-item MiniCOPE questionnaire. Respondents are to choose an answer on a 4-point Likert scale (0 - I hardly ever do that, 1 - I rarely do that, 2 - I often do that, 3 - I almost always do that) best representing their relation to each of 14 subscales that are: active coping (items 2, 7), planning (items 14, 25), positive reframing (items 12, 17), acceptance (items 20, 24), sense of humor (items 18, 28), turning to religion (items 22, 27), seeking emotional support (items 5, 15), seeking instrumental support (items 10, 23), self-distraction (items 1, 19), denial (items 3, 8), venting (items 9, 21), substance use (items 4, 11), behavioral disengagement (items 6, 16) and self-blame (items 13, 26). Possible outcomes in each subscale vary between 0 and 3, with a higher score suggesting more frequent use of specific coping strategies when stressed. The constancy of the test was described satisfactory and split-half reliability for 14 subscales was estimated at 0.86 (39). Cronbach alpha in our study was estimated at 0.76 in our study.

The Impact of Event Scale-Revised (IES-R)

Self-reported distress related to traumatic events was measured with The Impact of Event Scale-Revised (IES-R), which is a 22-item questionnaire falling into three subscales: intrusion (items 1, 2, 3, 6, 9, 14, 16, 20), hyperarousal (items 4, 10, 2, 15, 18, 19, 21) along with avoidance (items 5, 7, 8, 11, 13, 17, 22). The choices of the 5-point Likert scale ranges from not at all to definitely yes. There is no fixed cut-off score; however, according to the study by Juczyński et al. (40) on a Polish adaptation of IES-R cut-off score varies from 30 to 33 points. Thus, total outcomes exceeding 30 insinuate developing PTSD symptoms in reaction to trauma. The IES-R Cronbach's alpha was established at 0.92 for the scale in general for the Polish adaptation of the scale (40), and it was equal to 0.94 in the group analyzed in this paper.

Socio-Demographic Survey

Additionally, the socio-demographic survey containing questions about socio-demographic data and COVID-19 impact on participants were collected. The socio-demographic questionnaire involved data on general demographic characteristics such as age, sex, place of residence, work settings, being a doctor or a nurse, length of service counted in years, working hours per week, relationship status, having children, and taking care of the disabled or senior person in private life. COVID-19-related questions explored direct exposure to contagion and being provided with proper protection at work, contact with the infected without accurate protective measures, and the adequacy of workers compared to workload. The questions regarding the pandemic explored subjective assessments of the respondents.

Data Analysis

Statistical analysis was performed using the R (version 3.6) with *psych*, *car* and *MuMIn* packages. Moreover, in order to perform power analysis for GHQ-28 total score as well as IES-R total score, G∗Power (3.1.9.6) Programmer was used. Results of performed analyses were considered significant if the p-value was <0.05. The effect size for power analysis was estimated at ∼99% for GHQ-28 and 73% for IES-R when medical and non-medical groups were compared.

The Most Prominent Combinations of Coping Strategies in the Professionally Active Group During the Pandemic

Cluster analysis (k-means) was performed on the group of 2,038 respondents representing the general population of internet users. In the process of the fit index analysis, an optimal number of three coping strategies clusters emerged. For this study, outcomes of inactive and unemployed people were excluded as only 207 replies were obtained from non-working respondents. Clustered scores of 1,831 professionally active representatives of both medical and non-medical workforce were analyzed. Composition of coping strategies between emerged clusters were compared using the Mann-Whitney U test. Holm method was used to perform *post-hoc* analysis. Additionally, we performed the analysis of covariance (ANCOVA) to control for the effects of sex and age.

General and Psychopathological Characteristics With Respect to Clusters of Predominant Coping Strategies

GHQ-28 and IES-R scores, both totals, and particular domains were calculated and complemented with socio-demographic survey covering personal background. Obtained results were compared using Kruskal-Wallis rank sum test (continuous variables) and the chi-square (categorical variables) with all three coping strategy clusters in the general population of internet. Holm correction was used to perform *post-hoc* analysis.

Psychopathological Outcomes Regarding Particular Cluster of Coping in Medical and Non-medical Workers

The outcomes of GHQ-28 and IES-R were compared between clustered health care professionals and workers of other professions using the Mann-Whitney U test when continuous variables were considered and the chi-square, including categorical variables. Analysis of covariance (ANCOVA) was performed to control for the effects of sex an age on GHQ-28 and IES-R outcomes. Holm was used in *post-hoc* analysis. Moreover, differences between clusters in medical and non-medical groups in terms of percentage of positive GHQ-28 outcomes were analyzed using a logistic regression model.

Key Determinants of Psychopathological Symptoms in the Analyzed Group

To identify the key determinants of psychopathological manifestations measured with GHQ-28 and IES-R in the analyzed group, best subsets regression was performed. Variables which significantly differentiated coping strategy clusters were involved into the models with exception of place of residence, working hours per week that distinguished clusters to a lesser extent ($p > 0.01$). In the next step, variance inflation factor (VIF) was estimated. As age and length of service had VIF exceeding 10, age was removed from the models. Subsequently, obtained

models were selected using Bayesian Information Criterion (BIC) criterion and averaged.

RESULTS

Participants and Clusters of Predominant Coping Strategies

Participants were 1,173 health care professionals and 658 individuals representing non-medical professions. General characteristics of this sample were reported in our previous publication (13). Our analysis revealed three clusters (**Table 1**). The first one, referred to as the non-specific cluster, included participants who scored below the mean of all subscales measuring specific coping strategies (a lack of predominant coping strategy). The second cluster labeled maladaptive included respondents who scored above the mean of subscales measuring the likelihood of using denial, venting, substance use, behavioral disengagement, and self-blame. Finally, the adaptive cluster group scored above the mean of subscales measuring the odds of using active coping, planning, positive reframing, seeking emotional and instrumental support. **Supplementary Figure 1** presents histograms for the odds of using specific coping strategies at distinct clusters.

General and Psychopathological Characteristics With Respect to Cluster of Predominant Coping Strategies

There were significant differences between individuals representing specific clusters of predominant coping strategies concerning age, sex, place of residence, work profession (medical vs. non-medical professionals), length of service, working hours per week, having children, and self-perception of protection accuracy at work (**Table 2**). Individuals representing specific clusters differed significantly in terms of psychopathological manifestation. Respondents from the maladaptive cluster had significantly higher GHQ-28 scores (total score as well as scores of somatic symptoms, anxiety, and insomnia, social dysfunction, and severe depression) and IES-R scores (total score as well as scores of intrusion, arousal, and avoidance) compared to those representing the "non-specific" cluster and the adaptive cluster. Similar findings were observed with respect to the frequency of the GHQ-28 positive score. Also, individuals from the non-specific cluster had significantly higher GHQ-28 scores (total score as well as the score of social dysfunction and severe depression) compared to respondents from the adaptive cluster. In turn, the IES-R score of avoidance was significantly higher in subjects representing the adaptive cluster than in those from the non-specific cluster.

Psychopathological Outcomes Regarding a Particular Cluster of Coping in Medical and Non-medical Workers

The levels of psychopathological symptoms concerning clusters of predominant coping strategies in medical and non-medical professionals are in **Table 3**. Among medical professionals, participants from the maladaptive cluster had significantly higher GHQ-28 scores (total score and scores of all specific subscales) and IES-R scores (total score and scores of all specific subscales) compared to those from the non-specific cluster and the adaptive cluster (after post hoc tests as well as adjustment of age and sex). Similar differences were found for the frequency of the GHQ-28 positive score. Additionally, medical professionals from the adaptive cluster scored significantly lower in the GHQ-28 in total and in somatic symptoms, social dysfunction, and severe depression subscales compared to the non-specific cluster. Intriguingly, the frequency of GHQ-28 positive scores was significantly higher in medical professionals clustered as adaptive when compared to those from the non-specific cluster (after post hoc tests and adjustment of age and sex).

In non-medical professionals, significantly higher scores of GHQ-28 (total score and scores of all specific subscales) and IES-R scores (total score and scores of all specific subscales) were observed in the maladaptive cluster when compared to adaptive and non-specific. Likewise, the frequency of GHQ-28 positive scores was significantly higher when compared to adaptive and non-specific clusters. Moreover, non-medical workers clustered as adaptive scored considerably lower in social dysfunction and severe depression subscales of GHQ-28 when compared to non-specific cluster.

Furthermore, no significant differences were found between IES-R scores (total score and scores of all specific subscales) when adaptive and non-specific clusters were compared within both medical and non-medical groups. **Supplementary Figures 2**, **3** present histograms of the GHQ-28 and the IES-R scores in medical and non-medical professionals.

Key Determinants Regarding Psychopathological Symptoms in the Analyzed Group

Due to varied psychopathological manifestations in given clusters, best subsets regression analysis was performed (**Table 4**) to explore key determinants of GHQ-28 and IES-R scores in all respondents. Female sex was observed to be the only significant socio-demographic variable defined as a determinant of higher total and all subscales' scores of GHQ-28 and IES-R. Following a non-medical career, in turn, was found to be the only socio-demographic variable associated with less psychopathological symptoms measured with GHQ-28 total score and its' specific subscales of somatic symptoms well as anxiety and insomnia. Having children significantly determined lower scores of only severe depression subscale of GHQ-28.

In contrast, numerous significant relationships were detected between using specific coping strategies and GHQ-28 and IES-R scores. According to the regression models, strategies such as self-blame, behavioral disengagement, substance use, and denial were determinants of significantly higher outcomes in GHQ-28 and IES-R outcomes (total scores and all subscales' scores). Positive reframing, along with seeking emotional support used as a coping strategy, reduced GHQ-28 and IES-R scores (total scores as well as of all its subscales). Moreover, no significant relations were found between seeking instrumental support, planning, and both scales' outcomes. Using acceptance as a coping strategy significantly determined lower scores of only the social dysfunction subscale of GHQ-28.

TABLE 1 | Detailed characteristics of the clusters regarding coping strategies.

Coping style	Cluster 1 Non-specific *N* = 511 Median (IQR) Mean ± SD	Cluster 2 Maladaptive *N* = 742 Median (IQR) Mean ± SD	Cluster 3 Adaptive *N* = 785 Median (IQR) Mean ± SD	*Post hoc* comparisons	P adj
Active coping	2 (1.5–2)	2 (1.5–2)	2.5 1.5 (2, 3)	1 vs. 2**	1 vs. 3**
	1.77 ± 0.67	1.79 ± 0.5	2.5 ± 0.47	1 vs. 3**	2 vs. 3**
				2 vs. 3**	
Planning	2 (1.5–2)	2 (1.5–2)	2.5 1.5 (2, 3)	1 vs. 3**	1 vs. 3**
	1.79 ± 0.65	1.84 ± 0.51	2.54 ± 0.45	2 vs. 3**	2 vs. 3**
Positive reframing	1.5 1.5 (1, 2)	1.5 (1, 2)	2 (2–2.5)	1 vs. 3**	1 vs. 3**
	1.51 ± 0.72	1.48 ± 0.62	2.16 ± 0.59	2 vs. 3**	2 vs. 3**
Acceptance	2 (1.5–2)	2 (1.5–2)	2 (2–2.5)	1 vs. 2**	1 vs. 3**
	1.85 ± 0.66	1.76 ± 0.52	2.31 ± 0.49	1 vs. 3**	2 vs. 3**
				2 vs. 3**	
Sense of humor	1 (0.5–1.5)	1 (0.5–1.5)	1 (0.5–1.5)	1 vs. 3**	1 vs. 2**
	0.89 ± 0.6	0.95 ± 0.58	1.13 ± 0.61	2 vs. 3**	1 vs. 3**
					2 vs. 3**
Turning to religion	0.5 (0–1)	1 (0–1.88)	1 (0–2)	1 vs. 2**	1 vs. 2**
	0.71 ± 0.87	0.93 ± 0.93	1.16 ± 1.03	1 vs. 3**	1 vs. 3**
				2 vs. 3**	2 vs. 3**
Seeking emotional support	1 (0.5–1.5)	2 (1.5–2)	2 (2–2.5)	1 vs. 2**	1 vs. 2**
	1.03 ± 0.64	1.77 ± 0.64	2.15 ± 0.59	1 vs. 3**	1 vs. 3**
				2 vs. 3**	2 vs. 3**
Seeking instrumental support	1 (0.5–1.25)	2 (1.5–2)	2 (2–2.5)	1 vs. 2**	1 vs. 2**
	0.9 ± 0.56	1.81 ± 0.61	2.05 ± 0.59	1 vs. 3**	1 vs. 3**
				2 vs. 3**	2 vs. 3**
Self-distraction	1 (0.75–1.5)	2 (1.5–2)	2 (1.5–2)	1 vs. 2**	1 vs. 2**
	1.23 ± 0.65	1.81 ± 0.56	1.81 ± 0.66	1 vs. 3**	1 vs. 3**
				2 vs. 3*	
Denial	0.5 (0–1)	1 (0.5–1.5)	0.5 (0–1)	1 vs. 2**	1 vs. 2**
	0.49 ± 0.54	1.08 ± 0.6	0.53 ± 0.57	2 vs. 3**	2 vs. 3**
Venting	1 (0.5–1.5)	1.5 (1.5–2)	1.5 (1, 2)	1 vs. 2**	1 vs.2**
	0.97 ± 0.53	1.75 ± 0.48	1.58 ± 0.56	1 vs. 3**	1 vs. 3**
				2 vs. 3**	2 vs. 3**
Substance use	0 (0–1)	1 (0–1.5)	0 (0–1)	1 vs. 2**	1 vs. 2**
	0.4 ± 0.6	0.86 ± 0.83	0.42 ± 0.63	2 vs. 3**	2 vs. 3**
Behavioral disengagement	0.5 (0–1)	1 (1–1.5)	0.5 (0–0.5)	1 vs. 2**	1 vs.2**
	0.62 ± 0.55	1.19 ± 0.52	0.37 ± 0.41	1 vs. 3**	1 vs. 3**
				2 vs. 3**	2 vs. 3**
Self-blame	1 (0.5–1.5)	2 (1.5–2.5)	1 (0.5–1.5)	1 vs. 2**	1 vs. 2**
	0.99 ± 0.79	1.81 ± 0.72	0.99 ± 0.66	2 vs. 3**	2 vs. 3**

*P adj – p-value adjusted for sex and age (ANCOVA). Post-hoc comparison was performed using Holm method. Data expressed as median and interquartile range (IQR) as well as mean and standard deviation (SD). *p < 0.05, **p < 0.001.*

Additionally, venting, self-distraction, and turning to religion predicted worse outcomes in total and all IES-R subscales. Furthermore, active coping was significantly related to higher scores in the intrusion subscale of IES-R. The best models accounted for 37% and 33% of the variance of the psychopathological manifestations measured by GHQ-28 and IES-R, respectively.

DISCUSSION

This study aimed to analyze the most prominent combinations of coping strategies observed in the professionally active study sample during the pandemic. Moreover, it focuses on crucial individual factors and coping strategies that differentiate the severity and occurrence of psychopathological symptoms in the study sample of both medical and non-medical professionals.

TABLE 2 | Descriptive analysis of the clusters regarding all respondents.

		Cluster 1 Non-specific *N* = 467	Cluster 2 Maladaptive *N* = 655	Cluster 3 Adpative *N* = 709	*Post hoc* comparisons
Age		42 (32–51)	34 (28–47)	40 (31–50)	1 >2**
		43.04 ± 12.76	37.79 ± 11.56	41.09 ± 11.64	1 > 3*
					2 < 3**
Sex	Female	297 (21.0%%)	564 (40.0%)	552 (39.0%)	1 vs. 2**
					1 vs. 3**
	Male	170 (40.7%)	91 (21.8%)	157 (37.6%)	2 vs. 3**
Place of residence	Urban	433 (24.8%)	631 (36.2%)	680 (39.0%)	1 vs. 2*
					1 vs. 3*
	Countryside	34 (39.1%)	24 (27.6%)	29 (33.3%)	
Work profession	Medical	268 (22.8%)	452 (38.6%)	453 (38.6%)	1 < 2**
	Non-medical	199 (30.2%)	203 (30.9%)	256 (38.9%)	1 < 2*
Length of service (years)		18 (7–27)	10 (3–23)	15 (6–25)	1 > 2*
		18.73 ± 12.98	13.58 ± 11.8	16.57 ± 11.88	1 > 3*
					2 < 3*
Working hours per week		40 (40–50)	40 (40–50)	40 (37–48)	1 vs. 3*
		43.51 ± 13.95	43.65 ± 13.52	41.98 ± 13.18	2 vs. 3*
Being in relationship	Yes	363 (25.8%)	488 (34.7%)	556 (39.5%)	
	No	104 (24.5%)	167 (39.4%)	153 (36.1%)	
Having children	Yes	294 (29.0%)	308 (30.4%)	412 (40.6%)	1 vs. 2**
					2 vs. 3**
	No	173 (21.2%)	347 (42.4%)	297 (36.4%)	
Taking care of disabled or senior person in private life	Yes	80 (26.1%)	107 (35.0%)	119 (38.9%)	
	No	385 (25.3%)	547 (36.0%)	588 (38.7%)	
Direct contact with the infected at work	Yes	84 (28.7%)	105 (35.8%)	104 (35.5%)	
	No	382 (24.9%)	549 (35.7%)	605 (39.4%)	
Accurate protection at work	Yes	244 (28.0%)	245 (28.2%)	381 (43.8%)	1 vs. 2*
					2 vs. 3*
	No	223 (23.2%)	409 (42.6%)	328 (34.2%)	
Contact with (possibly) infected without accurate protection	Yes	54 (22.3%)	85 (35.1%)	103 (42.6%)	
	No	413 (26.0%)	570 (35.9%)	606 (38.1%)	
Number (adequacy) of workers when compared to workload	Too few	244 (24.0%)	382 (37.6%)	389 (38.4%)	
	Other responses	222 (27.3%)	272 (33.5%)	318 (39.2%)	
GHQ-28	Total	22 (14–33)	35 (24–45.5)	21 (14–29)	1 < 2**
		25.28 ± 14.75	35.81 ± 15.11	22.88 ± 11.75	1 > 3*
					2 > 3**
	Positive	216 (21.4%)	499 (49.4%)	295 (29.2%)	1 < 2**
					2 > 3**
	Somatic symptoms	5 (3–9)	9 (5.5–13)	5 (3–8)	1 < 2**
		6.42 ± 4.45	9.24 ± 4.74	6.08 ± 4.08	2 > 3**
	Anxiety and insomnia	7 (3–12)	12 (8–16)	7 (4–11)	1 < 2**
		7.95 ± 5.51	11.84 ± 5.17	7.88 ± 4.99	2 > 3**
	Social dysfunction	7 (6–10)	9 (7–12)	7 (6–8)	1 < 2**
		8.02 ± 3.23	9.66 ± 3.64	7.1 ± 2.87	1 > 3**
					2 > 3**
	Severe depression	2 (0–4)	4 (2–7)	1 (0–2)	1 < 2**
		2.89 ± 3.78	5.07 ± 4.35	1.81 ± 2.49	1 > 3**
					2 > 3**

(Continued)

TABLE 2 | Continued

		Cluster 1 Non-specific *N* = 467	Cluster 2 Maladaptive *N* = 655	Cluster 3 Adpative *N* = 709	*Post hoc* comparisons
IES-R	Total	29 (18–42)	45 (36–55)	31 (19–44)	1 < 2**
		30.29 ± 16.84	44.37 ± 15.55	32.05 ± 16.2	2 > 3**
	Intrusion	1.25 (0.62–2)	2.12 (1.5–2.75)	1.38 (0.75–2.12)	1 < 2**
		1.37 ± 0.93	2.11 ± 0.86	1.44 ± 0.87	2 > 3**
	Arousal	1.29 (0.71–2)	2.14 (1.57–2.71)	1.29 (0.86–2)	1 < 2**
		1.39 ± 0.88	2.09 ± 0.85	1.43 ± 0.82	2 > 3**
	Avoidance	1.43 (0.86–1.86)	1.86 (1.43–2.29)	1.57 (1–2)	1 < 2**
		1.37 ± 0.74	1.83 ± 0.71	1.5 ± 0.76	1 < 3*
					2 > 3**

*Post hoc comparison was performed using Holm method. Data expressed as median and interquartile range (IQR) as well as mean ± standard deviation (SD) or n (%). *p < 0.05, **p < 0.001.*

A great deal of research has already emphasized cluster analysis legitimacy exploring coping strategy clusters (11, 39–45). It may mirror actual responses to stressful transactions more adequately and help predict possible severe psychological distress and psychopathological symptoms. In our study, three clusters of coping strategies emerged and were tagged as non-specific, maladaptive, and adaptive, taking into account the used combination's prevailing character. Interestingly, no statistically significant differences were found in using strategies of active coping, planning, positive reframing, and acceptance and behavioral disengagement when non-specific and maladaptive strategy clusters were compared. Similarly, such relation was observed regarding denial, substance use, and self-blame in non-specific and adaptive. This suggests that using a single coping strategy may not determine the whole response as adaptive or maladaptive. Umucu et al. (43), examining a sample of individuals with self-reported chronic disorders and disabilities during the COVID-19 pandemic, analyzed single coping strategies and concluded that strategies such as self-distraction, denial, substance use, behavioral disengagement, venting, planning, religion, and self-blame were positively correlated with perceived coronavirus-related stress (43).

According to our research, all respondents using maladaptive coping strategies cluster have more psychopathological symptoms than those clustered as non-specific and adaptive. In turn, belonging to the non-specific cluster implies a greater severity of depressive symptoms and social dysfunction when compared to the adaptive cluster. Similarly, the highest total scores of GHQ-28 and thus, the most significant risk of developing psychopathological symptoms were found in both medical and non-medical groups using coping strategies clustered as maladaptive. Intriguingly, the proportion of positive GHQ-28 observed in medical professionals using strategies clustered as adaptive was significantly higher than those using coping strategies classified as non-specific. Such a relation was not observed among non-medical workers. The job-specific burden of the COVID-19 pandemic on medical workers' mental health has already been widely discussed (22–24, 46, 47).

Novel viral infections pose a unique challenge because of the transmission speed and considerable concentration of infected patients in health care facilities. According to previous studies, healthcare workers reported high-stress levels during the past epidemics (SARS and MERS) (48, 49). This stands in line with our research as a non-medical career was found to be a determinant of better mental health outcomes.

Moreover, our study indicates that people with the most extended work history and long working hours per week used non-specific coping strategies. In comparison, those presenting adaptive coping strategies worked the shortest hours. Furthermore, although working hours from a weekly perspective vary slightly, even a few hours per week could make a difference in developing psychopathological symptoms. Intriguingly, according to our research, not being provided with accurate Personal Protective Equipment had a more noticeable impact on using maladaptive coping strategies than actual direct exposure to contagion. This observation resonates with Szczesniak et al. (46) and Tan et al. (47), where the beneficial impact of protective measures on mental health was emphasized.

The age of the respondents also influences the use of different coping strategies. Different types of stressors are encountered as individuals age, and these differences in stressors, as well as associated life events, have an impact on coping strategies and health outcomes. Although most young adults are at low risk of physical health complications from COVID-19, they may be concerned with secondary consequences. Justo-Alonso et al. (44) showed that young people are more likely to be psychologically affected by COVID-19 significantly, while the oldest showed better psychological responses in general. However, there were slight differences between age groups in our study and adapted coping strategies as respondents were from the same age category. This being said, juxtaposing our results with recent research, psychological response to COVID-19 could vary among different age groups that may have clinical implications such as anxiety and depression.

TABLE 3 | Comparison of GHQ-28 and IES-R outcomes regarding particular cluster of coping in medical and non-medical workers.

			Medical ***N* = 1,173** **Median (IQR)** **Mean ± SD**	**P adj**	**Non- medical** ***N* = 658** **Median (IQR)** **Mean ± SD**	**P adj**
GHQ-28	Total	Cluster 1	25 (16–35) 26.7 ± 14.4	1 vs. 2 ** 1 vs. 3 ** 2 vs. 3 **	18 (12–31) 23.4 ± 15	1 vs. 2 ** 2 vs. 3 **
		Cluster 2	36 (26–47) 37.1 ± 14.6		30 (21.5–43) 33 ± 15.9	
		Cluster 3	22 (15–30) 23.8 ± 11.8		19 (12.75–27) 21.3 ± 11.6	
	Positive	Cluster 1	141 (19.9%)	1 < 2 ** 1 < 3 * 2 > 3 **	75 (25.0%)	2 > 1 ** 3 < 2 **
		Cluster 2	363 (51.1%)		136 (45.3%)	
		Cluster 3	206 (29.07%)		89 (29.7%)	
	Somatic symptoms	Cluster 1	6 (3–10) 6.8 ± 4.4	1 vs. 2 ** 1 vs. 3 * 2 vs. 3 **	5 (2–8) 5.9 ± 4.4	1 vs. 2 ** 2 vs. 3 **
		Cluster 2	9 (6–13) 9.6 (4.6)		8 (4.5–11.5) 8.4 ± 4.9	
		Cluster 3	6 (3–9) 6.4 ± 4.1		5 (2–8) 5.4 ± 3.9	
	Anxiety and insomnia	Cluster 1	8 (4–13) 8.7 ± 5.5	1 vs. 2 ** 2 vs. 3 **	6 (3–10) 7 ± 5.4	1 vs. 2 ** 2 vs. 3 **
		Cluster 2	13 (9–16) 12.4 ± 4.9		10 (6–15) 10.6 ± 5.5	
		Cluster 3	8 (4–12) 8.3 ± 5		7 (3–10) 7.2 ± 4.9	
	Social dysfunction	Cluster 1	7.5 (6–10) 8.3 ± 3.1	1 vs. 2 ** 1 vs. 3 ** 2 vs. 3 **	7 (6–9) 7.7 ± 3.3	1 vs. 2 ** 1 vs. 3 * 2 vs. 3 **
		Cluster 2	9 (7–12) 9.8 ± 3.6		9 (7–12) 9.4 ± 3.7	
		Cluster 3	7 (6–8) 7.1 ± 2.9		7 (6–8) 7.1 ± 2.8	
	Severe depression	Cluster 1	2 (0–4) 2.9 ± 3.7	1 vs. 2 ** 1 vs. 3 ** 2 vs. 3 **	1 (0–4) 2.8 ± 3.9	1 vs. 2 ** 1 vs. 3 ** 2 vs. 3 **
		Cluster 2	4 (2–8) 5.3 ± 4.3		3 (1–6) 4.6 ± 4.4	
		Cluster 3	1 (0–2) 1.9 ± 2.6		1 (0–2) 1.6 ± 2.3	
IES–R	Total	Cluster 1	30 (18–42) 30.7 ± 16.9	1 vs. 2 ** 2 vs. 3 **	29 (18.25–41) 29.8 ± 16.8	1 vs. 2 ** 2 vs. 3 **
		Cluster 2	45 (35–55) 44.5 ± 15.6		45 (36–55) 44.1 ± 15.5	
		Cluster 3	31 (20–45) 32.8 ± 16		30 (9–42) 30.8 ± 16.6	
	Intrusion	Cluster 1	1.38 (0.62–2) 1.4 ± 0.9	1 vs. 2 ** 2 vs. 3 **	1.25 (0.62–1.94) 1.4 ± 0.9	1 vs. 2 ** 2 vs. 3 **
		Cluster 2	2.12 (1.5–2.75) 2.1 ± 0.9		2.12 (1.56–2.62) 2.1 ± 0.9	
		Cluster 3	1.38 (0.75–2.12) 1.5 ± 0.9		1.25 (0.75–2) 1.4 ± 0.9	
	Arousal	Cluster 1	1.29 (0.71–2) 1.4 ± 0.9	1 vs. 2 ** 2 vs. 3 **	1.29 (0.71–1.86) 1.4 (0.9)	1 vs. 2 ** 2 vs. 3 **

(Continued)

TABLE 3 | Continued

		Medical *N* = 1,173 Median (IQR) Mean ± SD	P adj	Non- medical *N* = 658 Median (IQR) Mean ± SD	P adj
	Cluster 2	2.14 (1.57–2.71) 2.1 ± 0.8		2.14 (1.57–2.71) 2.1 ± 0.9	
	Cluster 3	1.43 (0.86–2) 1.5 ± 0.8		1.29 (0.71–1.86) 1.4 ± 0.8	
Avoidance	Cluster 1	1.36 (0.86–1.86) 1.3 ± 0.7	1 vs. 2 ** 2 vs. 3 **	1.43 (0.86–2) 1.4 ± 0.8	1 vs. 2 ** 2 vs. 3 **
	Cluster 2	1.86 (1.43–2.29) 1.8 ± 0.7		2 (1.43–2.29) 1.9 ± 0.7	
	Cluster 3	1.57 (1, 2) 1.5 ± 0.7		1.43 (0.96–2) 1.5 ± 0.8	

*P adj – p-value adjusted for sex and age (ANCOVA). Post-hoc comparison was performed using Holm method. Data expressed as median and interquartile range (IQR) as well as mean and standard deviation (SD). *p < 0.05, **p < 0.001.*

Additionally, according to Cai et al., the biggest concern of medical workers aged 31–40 years old was passing on viral infection to their young children and parents (22). In our study, such a dilemma was reflected in the more frequent use of maladaptive coping strategies in being a parent. However, this did not apply to being a caregiver of a senior or disabled person privately. Interestingly, when regression analysis of factors influencing worse mental health outcomes was performed, female sex emerged to be the only socio-demographic independent variable predicting significantly worse mental health outcomes. In this context, it might be related to cultural demand to adopt the primary care provider's role.

Post-traumatic stress syndrome has already been described concerning past outbreaks such as SARS (50), Ebola (51) as well as H1N1 (52). Prevalence of COVID-related PTSD amounts between almost 5% (14) to 29%, depending on the used diagnostic tool and cut-off score. The longitudinal research on COVID-19 influence on the general population carried by Wang et al. showed that both initial examination at the start of the epidemic and its follow-up showed IES-R scores exceeding 24 points that suggest the presence of PTSD symptoms. Importantly, no significant reduction was observed in the 1 month (10). According to Lai et al., low distress tolerance facilitated PTSD symptoms, while resilience was not proved to be a preventive factor. In our research, all respondents using coping strategies clustered as maladaptive scored significantly higher in total and all in subscales of IES-R compared to adaptive and non-specific.

Interestingly, respondents using coping strategies clustered as adaptive scored significantly higher in the avoidance subscale of IES-R when compared to the non-specific cluster. This suggests that they may try to get rid of thoughts and emotions resembling the trauma and avoid discussing them. In turn, it may be problematic in the context of establishing a therapeutic relationship with that group or designing proper supporting actions. Furthermore, active coping, which is considered to be an adaptive coping strategy and is associated with taking actions to improve the specific situation, was related to higher intrusion scores and thus recurrent thought and nightmares concerning trauma. This may be connected to lacking expertise and significant restrictions introduced due to the pandemic and frustration and helplessness. Likewise, planning, usually classified as an adaptive strategy, did not significantly determine IES-R scores. This stands in line with the research by Sim et al. (9) regarding experience from the SARS outbreak. Moreover, in our study, only seeking emotional support was found to reduce both totals and all subscales' scores of IES-R and thus mitigate overall discomfort along with specific dimensions of PTSD in contrast to seeking instrumental support even though they are both components of social coping.

The study provides another aspect worth addressing in further research: the pandemic's psychological impact on medical professionals. Recognition of coping strategies used by medical professionals and how the pandemic will influence them is crucial not only at an individual level but also on a collective one. Supporting the mental health of medical staff is a critical part of the public health response. Unless medical services take active measures and adopt a proactive approach, the pandemic's psychological consequences on healthcare staff could be dramatic. Given that the COVID-19 can lead to various mental health outcomes, understanding risk and resilience factors might hold a grand promise for developing specific interventions that aim to restore psychological well-being. Medical professionals armed with holistic training could better identify a fellow front-line worker experiencing anxiety or depression symptoms and provide support while maintaining the fluidity of healthcare in the face of a crisis (pandemic) (53). Buselli et al. (54) highlight in their study the negative impact of secondary trauma on medical professional's mental health in terms of anxiety. They emphasize that the stressful event

TABLE 4 | Determinants of GHQ-28 and IES-R scores in analyzed group.

		GHQ-28				IES-R				
	Predictor	**Total**	**Somatic symptoms**	**Anxiety and insomnia**	**Social dysfunction**	**Severe depression**	**Total**	**Intrusion**	**Arousal**	**Avoidance**
Female sex	Coeff	6.14**	2.14**	2.07**	1.02**	0.77**	4.57**	2.16**	1.82**	0.67*
	RVI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.21
	95%CI	4.75–7.54	1.68–2.60	1.49–2.65	0.68–1.36	0.41–1.13	2.88–6.25	1.39–2.92	1.19–2.46	−0.45–0.74
Having children	Coeff					−0.39*				
	RVI					0.38				
	95%CI					−0.56–0.27				
Non-medical profession	Coeff	−2.11**	−0.75**	−1.13**						
	RVI	1.00	1.00	1.00						
	95%CI	−3.27–0.95	−1.14–0.36	−1.58–0.68						
Length of service	Coeff									
	RVI									
	95%CI									
Accurate protection at work	Coeff									
	RVI									
	95%CI									
Active coping	Coeff							0.42*		
	RVI							1.00		
	95%CI							−0.25–0.38		
Planning	Coeff									
	RVI									
	95%CI									
Positive reframing	Coeff	−2.26**	−0.58**	−0.77**	−0.49**	−0.44**	−1.10**	−0.72**	−0.57**	0.22*
	RVI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.29
	95%CI	−2.73–1.80	−0.73–0.43	−0.95–0.58	−0.61–0.37	−0.55–0.33	−1.64–0.55	−0.97–0.46	−0.77–0.36	−0.15–0.28
Acceptance	Coeff				−0.17*					
	RVI				0.35					
	95%CI				−0.24–0.12					
Sense of humor	Coeff	−0.62*		−0.31**			−0.78*	−0.38*	−0.28*	
	RVI	0.22		0.78			0.25	0.37	0.13	
	95%CI	−0.69–0.42		−0.55–0.06			−0.93–0.53	−0.54–0.26	−0.24–0.17	
Turning to religion	Coeff	0.37*	0.12*	0.19*			0.99**	0.40**	0.33**	0.28**
	RVI	0.26	0.14	0.92			1.00	1.00	1.00	1.00
	95%CI	−0.26–0.45	−0.07–0.11	0.03–0.32			0.64–1.34	0.25–0.56	0.20–0.46	0.16–0.40
Seeking emotional support	Coeff	−0.90**	−0.19*	−0.21*	−0.18**	−0.29**	−1.16**	−0.33*	−0.40**	−0.38**
	RVI	1.00	0.55	0.43	1.00	1.00	1.00	0.88	1.00	1.00
	95%CI	−1.30–0.50	−0.31–0.10	−0.32–0.14	−0.28–0.09	−0.39–0.19	−1.64–0.68	−0.58–0.00	−0.57–0.22	−0.54–0.23
Seeking instrumental support	Coeff									
	RVI									
	95%CI									
Self-distraction	Coeff			0.25*			1.15**	0.32*	0.29*	0.61**
	RVI			0.45			1.00	0.27	0.59	1.00
	95%CI			−0.16–0.39			0.60–1.70	−0.22–0.39	−015–0.50	0.43–0.80
Denial	Coeff	1.48**	0.45**	0.58**	0.20*	0.29**	2.64**	0.93**	0.74**	1.02**
	RVI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	95%CI	0.99–1.96	0.28–0.61	0.39–0.76	0.08–0.32	0.17–0.42	2.05–3.24	0.68–1.18	0.51–0.96	0.83–1.20
Venting	Coeff	1.32**	0.39**	0.59**			1.78**	0.74**	0.77**	0.38**
	RVI	1.00	1.00	1.00			1.00	1.00	1.00	1.00
	95%CI	0.80–1.84	0.21–0.57	0.37–0.81			1.14–2.42	0.45–1.03	0.52–1.01	0.17–0.59

(Continued)

TABLE 4 | Continued

		GHQ-28				IES-R				
	Predictor	**Total**	**Somatic symptoms**	**Anxiety and insomnia**	**Social dysfunction**	**Severe depression**	**Total**	**Intrusion**	**Arousal**	**Avoidance**
Substance use	Coeff	1.94**	0.57**	0.68**	0.28**	0.46**	2.02**	0.90**	0.80**	0.30**
	RVI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	95%CI	1.55–234	0.44–0.70	0.53–0.83		0.36–0.57	1.54–2.49	0.69–1.11	0.62–0.97	0.15–0.46
Behavioral disengagement	Coeff	1.81**	0.46**	0.35*	0.47**	0.58**	0.86*	0.48*	0.36*	
	RVI	1.00	1.00	1.00	1.00	1.00	0.28	0.15	0.68	
	95%CI	1.26–2.36	0.26–0.66	0.14–0.57	0.33–0.61	0.44–0.73	−0.59–1.08	−0.28–0.43	−0.14–0.63	
Self-blame	Coeff	1.30**	0.20*	0.37**	0.24**	0.51**	2.60**	1.26**	0.85**	0.46**
	RVI	1.00	0.73	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	95%CI	0.90–1.69	−0.06–0.36	0.21–0.52	0.14–0.34	0.41–0.62	2.12–3.09	1.04–1.47	0.66–1.04	0.31–0.61

*Results of best subset models regression analysis. Coeff - coefficient, RVI, relative variable importance; 95% CI, 95% confidence interval. *$p < 0.05$, **$p < 0.001$.*

itself is not so much a risk factor, but the event's perception as traumatic.

Limitations

Despite its contributions, the present study is not exempt from certain limitations. Our sample might have low representativeness as we did not record the number of individuals approached for participation. The character of the survey was voluntary, self-reported, which may have facilitated selection bias.

Moreover, the sample was not equally distributed for gender as the majority of respondents were women, which may have affected our results. Similarly, data concerning detailed occupations of non-medical respondents was obtained but minding a considerable level of generality and restricted number of received replies; they could not be adequately classified and analyzed from the perspective of operating mode, possible contagion risk, and their consequences for mental health. We also did not inquire about co-occurring mental disorders. Furthermore, the online distribution could have facilitated the participation of those confident with internet use. Likewise, this study's cross-sectional design prohibits statements of causality, and the anonymity of the respondents prevents us from tracking ones needing psychological support. However, providing the workforce with such support demands exploring observed relationships between coping strategies and the severity of psychopathological symptoms in further research.

CONCLUSIONS AND PRACTICAL IMPLICATIONS

Our findings suggest some reflections about the relations between coping strategies and the severity of psychopathological symptoms among medical and non-medical professionals. One possible determinant of the immediate response to the pandemic outbreak could be employer support. Occupational and behavioral health interventions such as education, health promotion, and anti-stigma interventions directed at those with the most extended work history and long working hours per week who use non-specific coping strategies could prevent them from developing clinically significant psychopathological symptoms. Working schedules should be created thoughtfully to prevent workers from overworking, and proper protection at work should be provided. Moreover, interventions aiming to identify and address one's emotions, such as psychological counseling, may be beneficial regardless of the career.

In contrast, instrumental support may not result in better mental health outcomes. Remarkably, in our research, non-medical background relates to better mental health outcomes, while being a female is associated with developing more psychopathological outcomes. This being said, special attention should be paid to supporting female medical workers. Given the coronavirus pandemic's dynamically developing situation, generating evidence-driven supportive initiatives, respecting inter-subject variability is of the utmost importance in restoring the general public and medical, mental well-being, and resilience workers.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

MC, JM, and BM designed the research project, the main conceptual ideas and proof outline, conducted the study, interpreted the results, complied the literature sources, wrote the manuscript, and checked the references. AP complied the literature sources, wrote the manuscript, and checked the references. JR and DS conceptualized and designed the study, helped in the interpretation of data, and checked references. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.663224/full#supplementary-material

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Article

The Portrait of Cyberchondria—A Cross-Sectional Online Study on Factors Related to Health Anxiety and Cyberchondria in Polish Population during SARS-CoV-2 Pandemic

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Abstract: The SARS-CoV-2 pandemic has served as a magnifying glass for cyberchondria, while the internet emerged as one of the main sources of medical information and support. The core ambition of this study was to estimate the level of cyberchondria and describe the socio-demographic, clinical and pandemic-related factors affecting its severity amid the SARS-CoV-2 pandemic. A cross-sectional study was performed between 16 May 2020 and 29 December 2020 in Poland within a sample of 538 adult internet users. The online survey tool included a Polish adaptation of the Cyberchondria Severity Scale (CSS-PL) and the Short Health Anxiety Inventory (SHAI), complemented with a set of questions covering sociodemographic, clinical and pandemic-related factors. Participants were clustered according to severity of health anxiety and cyberchondria symptoms. The performed binary logistic regression indicated professional inactivity, having a chronic mental disorder and subjectively limited access to healthcare due to COVID-19 to be key determinants of severe health anxiety and cyberchondria. Cyberchondria might be a remarkable public health issue as large proportion of respondents from the analyzed sample population of internet users met the criteria for severe symptoms. Key determinants of intense cyberchondria corresponded with employment stability, mental resilience and accessibility of healthcare services, which could be greatly challenged amid the pandemic.

Keywords: cyberchondria; pandemic; health anxiety

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1. Introduction

Previous epidemics and pandemics of viral infections, such as SARS [1], AH1N1 [2], or Ebola [3], provided fertile ground for developing anxiety, which also emerged to be a common issue during the COVID-19 outbreak [4–6]. Health anxiety is a continuous construct [7] ranging in intensity from almost none to severe. While a certain alertness towards one's health status could be understood as an advantageous evolutionary mechanism, excessive health anxiety considerably disrupts daily functioning [8] and facilitates uncontrolled searching for medical data [9]. The intensified use of the internet in this context can be interpreted as a safety-seeking behavior [10], to subjectively estimate the probability of the illness and then prospectively dismiss such a scenario, whereas in reality, pessimistic information [11] or exceptionally dramatic media coverage of health-related issues [12] may worsen the subjective distress. This interplay could be explained by the cognitive-behavioral model of health anxiety [13], elaborating on Beck's cognitive theory of psychopathology [14]. According to the model, distorted beliefs and erroneous schemas result in behavioral, emotional, and physical reactions. For example, habitually perceiving

mild bodily symptoms as related to a serious medical condition may lead to an amplification of these sensations. Jokic-Begic et al. [15] claim that searching the internet for medical content intensified during the pandemic. In a medical milieu, a certain behavioral pattern (repeatedly and/or excessively reviewing medical content on the internet) that escalates the emotional burden (mainly health anxiety) is called "*cyberchondria*" [16,17]. Thus, individuals with cyberchondria experience amplified anxiety instead of support and relief in the course of searching for virtual content. Importantly, the aforementioned searches are compulsive and persistent in nature [18]. The term was probably coined by Ann Carrns in the pages of the Wall Street Journal in 1999 as a reaction to anticipated threats related to the advent of the internet. Jungman et al. [19] deduce, based on work done by Williams [20] and Witthoft et al. [21], that the vicious circle in cyberchondria roots in predisposing factors and is sustained by negative reinforcement. A systematic review by Vismara et al. [18] summarizes that a growing body of research confirms the relationship of cyberchondria with health anxiety, hypochondriasis, obsessive compulsive disorder, and problematic usage of the internet. The supposed close link with hypochondriasis was emphasized by using the name "*cyberchondriasis*" by some authors [22–24]. Up until now, the course of cyberchondria is said to be modified by personality characteristics such as optimism and neuroticism [25], low self-esteem [26], anxiety sensitivity [27,28], particular meta-cognitive beliefs [29], pain catastrophizing [30] and intolerance of uncertainty [28,31,32]. Although cyberchondria uniquely affects functional impairment and alters service use when compared to health anxiety alone [33] and comes with considerable cost and burden [24], it is not regarded a separate construct. Hence, it has been included in neither the Diagnostic and Statistical Manual of Mental Disorders (DSM) nor the International Classification of Diseases (ICD). Conversely, a suitable definition can be found in the Oxford English Dictionary: "*a person who (obsessively) researches health information on the Internet, typically to find a disease matching particular (real or imagined) symptoms*". Additionally, it was announced to be a finalist in the "2008 Word of the Year" held by Webster's New World [34]. Growing recognition of cyberchondria in the non-medical literature contrasts with a major knowledge deficit concerning vulnerability factors that contribute to higher levels of anxiety during internet searches and their compulsive backlash [18]. Notably, while high baseline health anxiety is not the essential factor for cyberchondria development [35], resources exploring individual background characteristics remain scarce and often contradictory [18]. What is certain is that prolonged and recurrent distress in the face of menace may facilitate a cycle of distress [36,37] and lead to further information seeking concerning a stressful event [38]. The phenomenon of rapid and massive pandemic-related information production was observed and announced by the World Health Organization as the "*infodemic*", co-existing with the actual biological threat [39]. Undeniably, the internet is critical for timely and constant sharing of recommendations and updates to enhance preparedness and adequate response to the SARS-CoV-2 pandemic by healthcare professionals and governments. At the same time, the penetration of solid information could have been uneven as the general population of Internet users was simultaneously exposed to immoderate and emotionally driven coverage of the pandemic curated by private users on social media [40]. Eichenberg et al. [41], investigating patterns of online health resource use, observed that people with hypochondria are more eager to search online for health-related content and employ more services available on the internet. Under such circumstances, their e-health literacy could be seriously challenged [38]. For example, McDonnell et al. [42] observed media-induced anxiety towards H1N1 influenza within a relatively unimpacted community that increased of visits to the Emergency Department comparable to rates expected in affected regions.

In summarizing, cyberchondria is a relatively novel concept, observed to be potentially distinct from the anxiety disorder spectrum. From the perspective of a pandemic-related mental health disaster [43] and massive misinformation regarding the threat, it seems crucial to pay attention to all the phenomena that could be psychopathological. The study aimed to assess the level of cyberchondria and describe sociodemographic, clinical, and pandemic related factors affecting its severity amid the current epidemiological crisis.

2. Materials and Methods

2.1. Participants

Data were collected through a cross-sectional online survey, made available to the participants between 16 May 2020 and 29 December 2020, in Poland. The snowball sampling method was applied to recruit adult representatives of the Polish population of internet users. Researchers nominated their colleagues, friends, families and followers on social media to distribute the survey within internet users eligible for the study. The inclusion criteria involved adult age, computer literacy and access to the internet. The Computer Assisted Web Interviews (CAWI) method was employed [44]. Respondents were informed about the voluntary, confidential, and anonymous character of the study. This information was provided at the very beginning of the questionnaire. Submitting a filled survey designated that respondent was familiar with the study's goal, description, reached adulthood as well as agreed to the terms of participation in the research. Data analysis was limited to completed questionnaires. The Ethics Committee at Wroclaw Medical University (Poland) approved the study protocol (approval number: 286/2020). The study was performed in agreement with the principles of the Declaration of Helsinki. The paper structure was based on STROBE statements for reporting cross-sectional studies [45].

2.2. Measures

The Polish adaptation of Cyberchondria Severity Scale (CSS-PL) [26] based on the work by McElroy et al. [17] is a 33-item scale that enables complex assessment of cyberchondria. Items are arranged in 5 sub scales: compulsion (item 3, 6, 8, 12, 14, 17, 24, 25), distress (item 5, 7, 10, 20, 22, 23, 29, 31), excessiveness (item 1, 2, 11, 13, 18, 19, 21, 30), reassurance (item 4, 15, 16, 26, 27, 32) and mistrust of medical professional (item 9, 28, 33). The answers are ranged on 5-point Likert scale (1-never, 2-rarely, 3-sometimes, 4-often, 5-always). The higher the score, the more intense the experienced symptoms. Cronbach's alpha for the Polish adaptation was consistent with the original version [17] and ranged between 0.75 and 0.95. In our research, it was estimated at 0.90.

The Polish adaptation of Short Health Anxiety Inventory performed by by Kocjan [46] is a 16-item self-administered register based on The Short Health Anxiety Inventory (SHAI) by Salkovskis [47]. It comprises 18 items exploring two elements of hypochondriasis: illness likelihood (IL) and negative consequences of an illness (NC). However, the general score can also be considered and understood as a summation of the points. Each item is comprised of four statements related to the last 6 months. Participants were asked to choose one as an equivalent to a 4-point Likert scale, where the first answer suggested *no* symptoms (0), second *mild symptoms* (1), third *severe symptoms* (2) and fourth *very severe symptoms* of clinical hypochondriasis. Cronbach's alfa of the Polish adaptation was described as excellent as it exceeded 0.90 [46]. It was evaluated to be 0.92 in the current study.

The questionnaire on socio-demographic, clinical and pandemic-related factors consisted of 16 questions developed based on a literature review. Fourteen questions were closed and allowed participants to choose one answer describing them the most accurately. Two open questions were designed to record the number of contacts with both mental and non-mental health services. The questions were not piloted. They covered variables such as age, gender, education, working status including remote work, place of residence, number of household members, engagement in social meetings or time spend on the internet during the day. Respondents disclosed if they were living with any chronic physical or mental illnesses and estimated how many times they used mental and somatic health services during last month including online consultations. Additionally, data regarding probable pandemic-related life circumstances such as work loss or trust in online COVID-themed contents were recorded. The questions on the pandemic were used to obtain the subjective assessments of the respondents.

2.3. Data Analysis

Statistical analysis was performed using the Statistical Package for Social Sciences, version 20 (SPSS Inc., Chicago, IL, USA) [48]. As mistrust of medical professionals factor of CSS poorly correlated with the global cyberchondria, it was regarded to be only theoretically associated with the phenomenon of cyberchondria [10,26,45,46]. With this in mind, it was not analyzed. Participants were divided into two groups based on the CSS and SHAI scores and cut-off points established using the k-means cluster analysis. Individuals with primary and secondary educational background were labelled as *lower educated* and analyzed together due to their very limited representation in our study. Between-groups differences in continuous variables were tested using the Mann–Whitney U test due to non-normal distribution (the Kolmogorov–Smirnov test). The chi-square test was used to compare distribution of categorical variables. Significant associations in bivariate tests were further explored using the binary logistic regression analysis. The group status employed according to the k-means cluster analysis was included as the dependent variable. The level of significance was set at $p < 0.05$.

3. Results

Out analysis revealed two prominent clusters (Figure 1). The first cluster included 372 individuals with low center scores of health anxiety and cyberchondria, while the second cluster of 166 people was characterized by high center scores in both measures. Means, standard deviation values and ranges regarding CSS-PL and SHAI total outcomes within particular clusters are presented in Table 1.

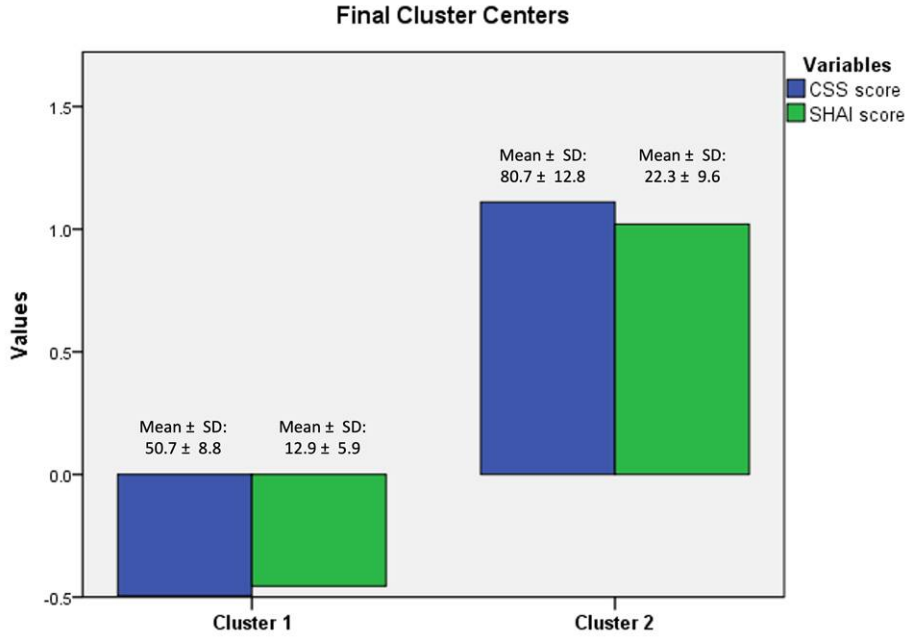

Figure 1. Results of k-means cluster analysis.

Table 1. General characteristics of the emerged clusters based on CSS-PL and SHAI total scores.

	Cluster 1	Cluster 2
	mean ± SD (range)	mean ± SD (range)
CSS-PL	50.7 ± 8.8 (30–68)	80.7 ± 12.8 (63–129)
SHAI	12.1 ± 5.9 (0–35)	22.3 ± 9.6 (2–51)

The majority of the respondents within emerged clusters were well-educated women (n = 438, 81.4%), co-habiting with at least one person (n = 482, 89.6%) in urban environments (n = 468, 87.0%). The mean age of all respondents in our study sample was 36.7 ± 12.5 years. Table 2 shows bivariate comparisons of individuals representing both clusters. Being professionally ($p < 0.05$) and socially active in the preceding month ($p < 0.05$) were significantly more frequent within individuals with low levels of cyberchondria and health anxiety. Participants clustered as experiencing severe cyberchondria and health anxiety reported chronic mental comorbidity significantly more often ($p < 0.001$). Similarly, the use of both psychiatric ($p < 0.001$) and non-psychiatric ($p < 0.05$) services in that group was relevantly more frequent. Even though study participants in Cluster 2 were significantly keener on using online consultations with medical professionals in the previous month ($p < 0.05$), they also self-reported limited access to medical care due to the COVID-19 pandemic ($p < 0.001$). No significant differences between clusters were found in age, gender, education, place of residence, number of household members, remote work, job loss and trust in online contents covering COVID-19 and chronic somatic comorbidity. The results of the binary logistic regression can be found in Table 3. The key determinants of high CSS and SHAI total scores were professional inactivity (B = 0.535, $p < 0.05$), having a chronic mental disorder (B = 0.933, $p = 0.001$) and subjectively limited access to care due to COVID-19 (B = 0.781, $p < 0.05$). At the same time, the number of contacts with psychiatric and somatic medical care units, the use of online consultations in the previous month along with involvement in social gatherings did not significantly determine higher scores of cyberchondria and health anxiety.

Table 2. General characteristics of the sample with respect to clusters of the CSS and SHAI scores (n = 538).

	Total Sample n = 538	**Cluster 1 (Low Scores of CSS-PL and SHAI)**		**Cluster 2 (High Scores of CSS-PL and SHAI)**		p
	Mean ± SD or n (%)	n	**Mean ± SD or n (%)**	n	**Mean ± SD or n (%)**	
Age, years	36.7 ± 12.5	372	36.7 ± 12.8	166	36.6 ± 11.9	0.682
Gender, males	100 (18.6)	372	74 (19.9)	166	26 (15.7)	0.244
Education, higher	422 (78.4)	372	297 (79.8)	166	125 (75.3)	0.237
Active working status, yes	397 (73.8)	372	290 (78.0)	166	107 (64.5)	**0.001**
Place of residence, urban	468 (87.0)	372	320 (86.0)	166	148 (89.1)	0.336
Number of other household members > 1	482 (89.6)	372	330 (88.7)	166	152 (91.6)	0.316
Remote work, yes	245 (45.5)	369	171 (46.3)	164	74 (45.1)	0.794
The loss of work due to the COVID-19 pandemic, yes	22 (4.1)	372	13 (3.5)	166	9 (5.4)	0.579
Trust in online contents about the COVID-19, yes	56 (10.4)	372	33 (8.9)	166	23 (13.9)	0.176
Involvement in social meetings during the preceding month, yes	316 (58.7)	372	230 (61.8)	166	86 (51.8)	**0.029**
Chronic somatic diseases, yes	97 (18.0)	372	66 (17.7)	166	31 (18.7)	0.795
Chronic mental disorders, yes	94 (17.5)	372	42 (11.3)	166	52 (31.3)	**<0.001**
The use of online consultations with medical professionals in the preceding month, yes	206 (38.3)	370	125 (33.8)	166	81 (48.8)	**0.001**
The number of contacts with medical care units in the preceding month (without mental health services)	1.0 ± 1.6	372	0.9 ± 1.6	166	1.1 ± 1.6	**0.005**
The number of contacts with mental health services in the preceding month	0.5 ± 1.3	372	0.3 ± 1.0	166	0.8 ± 1.7	**<0.001**
Self-reported limited access to medical care due to the COVID-19 pandemic, yes	366 (68.8)	372	232 (62.4)	166	134 (80.7)	**<0.001**

Significant differences ($p < 0.05$) are in bold.

Table 3. Factors associated with cluster 2 (high scores of CSS-PL and SHAI) in binary logistic regression analysis.

	B	*SE*	*OR*	*95%CI*	*p*
Active working status, no	0.535	0.220	1.707	1.110–2.626	**0.015**
Chronic mental disorder, yes	0.933	0.286	2.542	1.452–4.450	**0.001**
The number of contacts with medical care units in the preceding month (without mental health services)	0.024	0.067	1.024	0.898–1.168	0.720
The number of contacts with mental health services in the preceding month	0.094	0.087	1.098	0.926–1.302	0.280
The use of online consultations with medical professionals in the preceding month, yes	0.342	0.232	1.408	0.893–2.218	0.141
Involvement in social meetings during the preceding month, yes	−0.278	0.203	0.757	0.509–1.127	0.170
Self-reported limited access to medical care due to the COVID-19 pandemic, yes	0.781	0.233	2.184	1.383–3.450	**0.001**

Significant associations ($p < 0.05$) are in bold.

4. Discussion

Based on the available data, it could be assumed that 86.8% of the Polish population were internet users in 2020, when adult population was about 31 million [49]. Hence, our sample represents approximately 538 of 27 million adult internet users in Poland at that time [50]. In our sample, 166 of 538 (30.9%) internet users were clustered as those experiencing high level of cyberchondria symptoms as well as health anxiety. To the best of our knowledge, to date this is the only research aimed at analyzing the phenomenon of cyberchondria in the general population of internet users during the pandemic. Existing data refer to a narrow group of dental students surveyed by Shailaja et al. [51]. According to this study, as many as 98.7% of 404 answerers were moderately or severely affected by any of cyberchondria symptoms, amid the epidemiological crisis. Nevertheless, the authors did not refer to the CSS total scores in the sample. Pre-pandemic research on cyberchondria was carried out in various groups of respondents and indicated discrepancies in the severity of this phenomenon. Aulia et al. [52], stimulated by the idea of the "medical student syndrome", examined 162 first-year students in Indonesia, and concluded that 37.65% present symptoms of cyberchondria. Seven percent of participants scored positive for cyberchondria according to the CSS threshold estimated by the ROC curve analysis. Wijesinghe et al. [53], in turn, focused on outpatients from two general hospitals in Sri Lanka and estimated the prevalence of distinct symptoms of cyberchondria at 16.3%. Akhtar et al. [54] analyzing a group of graduates aged at least 35 years, with no chronic medical condition, found that 24.3% of respondents experienced acute symptoms of cyberchondria, while 50.0% reported moderate symptoms. Makarla et al. [55] found 55.6% of the surveyed technology sector workers to potentially have prominent cyberchondria symptoms, using a cluster approach. Moreover, White et al. [56] observed that 38.4% of the representatives of a general population sample reported a progression from low baseline health anxiety to more severe health anxiety, while searching the web for over 11 months. Our observations seem consistent with the pre-COVID body of research. However, the obtained results could be associated with the period of data collection, since at the end of April 2020, strict restrictions connected to the first national lockdown were gradually lifted in Poland. Consequently, Polish citizens partly regained their flexibility and freedom to, for example engage in recreational activities within common spaces, if personal protective equipment was used. This could have enhanced their sense of control and given them hope for overcoming the health crisis. Although previous research has suggested the potential role of sociodemographic factors such as age, gender, and education in cyberchondria, our results do not corroborate these findings. These variables did not differ across both clusters and were not found to be determinants of intense health anxiety as well as cyberchondria. Thus, they did not satisfactorily explain our outcomes. It could be hypothesized that intrapsychic factors play a greater role in cyberchondria intensity. The exploration of this area may be of utmost importance during the pandemic as such a crisis could blend the

boundaries between internal and external menaces. When such boundaries are vague, the external threats related to the pandemic are additionally powered by unconscious internal vulnerabilities. In consequence, generated emotional tension may find an outlet for example through certain behavior or attitudes towards people, objects or situations [57,58]. Nevertheless, personality traits were not examined in this study. Taking matters further, attention should also be paid to interpersonal factors such as social networks. We noticed that respondents with high levels of health anxiety and cyberchondria were less eager to engage in social meetings. This is somewhat consistent with the observation made by Farooq et al. [40] that experiencing cyberchondria during pandemic may facilitate the intention to self-isolate. Simultaneously, no significant difference between the clusters was found regarding remote work which could be potentially appreciated by people with health anxiety and cyberchondria amid the COVID-19 pandemic. Professional inactivity, in turn, determined severe health anxiety and cyberchondria symptoms. It could be presumed that unstructured daily routines may favor unrestricted internet searches in order to find free medical information and support. Such searches may be hypothetically fueled by symptoms of anxiety, depression, and somatization that are more prevalent in that group when compared to working individuals [59]. Nonetheless, job loss due to the pandemic did not significantly vary between clusters. Furthermore, Bajcar et al. [26] suggest that adopting measures to prevent cyberchondria symptoms may reduce a risk of developing various disorders. This is somewhat consistent with our results, which demonstrated that living with a chronic mental disorder was more prevalent in the cluster characterized by high health anxiety and high cyberchondria as well as was found to be a significant determinant of more severe symptoms. Besides, the use of psychiatric and non-psychiatric offline consultations was significantly more prevalent in the cluster characterized by high levels of health anxiety and cyberchondria in the current research, while at the same time, our results suggest that individuals with severe health anxiety and cyberchondria were less eager to use online consultations. Tanis et al. [60] noticed that health anxiety is positively related to searching for medical information on the internet and individuals experiencing such symptom are satisfied with medical consultations to a lesser extent. Likewise, individuals with cyberchondria could have a negative attitude toward medical staff and not consider online health-related data as a proper substitute for a professional consultation [61]. These observations could at least partly explain the reluctant approach towards online counselling within the high health anxiety and high cyberchondria cluster in our study, along with self-reported restrained access to medical care as that was largely moved to the virtual space due the pandemic. Conversely, Eichenberg et al. [41] concluded that such behavior is not a consequence of limited access to offline services but rather tendency to double-check received information.

Limitations

The results of this research must be considered in light of several limitations. The vague definition of cyberchondria and the lack of a fixed cut-off score of the variants of CSS may hinder the proper assessment of the severity of this phenomenon and comparability across the existing literature. The cross-sectional and self-report design of the study prevents us from confirming casual relations between the analyzed variables. This study was inspired by the first wave pandemic and a related surge of internet traffic. Notably, no data were collected in pre-pandemic period as well as no follow-up was performed. Caution should be used not to generalize results without contemplating mentioned circumstances. Replication using longitudinal and experimental methodology is necessary. It should also be noted, that our sample might be characterized by low representativeness as we did not control for the initial number of individuals approached for participation. Consequently, the response rate and extent and reasons of non-participation were not recorded. For similar reasons, the response rate was not recorded. On one hand, online data collection surveys are suitable for large and diverse samples, on the other, response rates in web surveys are generally low, which may introduce high non-response errors [44]. Similarly, an inadequate

representation of individuals with basic or secondary education made comparisons between those two education levels inaccurate. At the same time, data concerning respondents' professions were not collected. Moreover, the vast majority of our respondents were well-educated women. As gender may imply different psychosocial consequences of the COVID-19 pandemic [62,63], it would be interesting to elaborate if the burden of traditional gender roles may be an independent determinant of cyberchondria intensity. Despite considering the physical and mental co-morbidity of the study participants, we did not analyze individual medical records. Likewise, we did not control for trait anxiety. A greater variety in age ranges, namely incorporating representation of both young adults and seniors could complement the investigation of an interplay between sociodemographic variables and cyberchondria symptoms severity. Finally, any research during the pandemic should be interpreted in light of local pandemic-related restrictions. It could be hypothesized that at the earliest stages of strict national lockdowns, the severity of symptoms among vulnerable populations could have been even greater.

5. Conclusions

The present study indicates that a large proportion of the analyzed sample might experience cyberchondria symptoms. This phenomenon might be associated with occupational inactivity, the diagnosis of a chronic mental disorder and restricted access to medical care due to the COVID-19 pandemic. As employment stability, mental resilience and organization of healthcare services are seriously challenged amid the current crisis, these problem areas should be addressed in both clinical practice and future research. Providing patients with information on how to effectively obtain proper medical and social support could possibly alleviate the symptoms of cyberchondria and improve the therapeutic relationship. Moreover, further research in this field should explore interpersonal as well as intrapersonal factors, including personality traits, which determine the severity of cyberchondria symptoms.

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Social Support Mediates the Association between Health Anxiety and Quality of Life: Findings from a Cross-Sectional Study

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Abstract: This study aimed to test if perceived social support and cyberchondria mediate the association between health anxiety and quality of life (QoL) in a nonclinical sample. Cross-sectional research involved adult internet users (n = 538) between 16 May 2020 and 29 December 2020 in Poland who completed self-report questionnaires, including the cyberchondria severity scale (CSS-PL), the short health anxiety inventory (SHAI), the multidimensional scale of perceived social support (MSPSS) and the quality of life scale (QOLS). A mediation analysis was performed to examine the direct effects of health anxiety on cyberchondria, perceived social support and quality of life. Likewise, the effects of cyberchondria and perceived social support on QoL were analyzed. Hence, indirect effects of health anxiety on QoL through cyberchondria and perceived social support were explored. Health anxiety significantly impaired QoL both directly and indirectly through low-perceived social support. Perceived social support partly mediated the association between health anxiety and QoL. Cyberchondria did not have a significant direct effect on the latter. Thus, cyberchondria did not mediate the relationship between health anxiety and QoL. Boosting-perceived social support may mitigate the detrimental effect of health anxiety on QoL. Cyberchondria was not found to have a significant effect on QoL in contrast to health anxiety alone.

Keywords: cyberchondria; health anxiety; quality of life; perceived social support

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1. Introduction

Quality of life (QoL) is a meaningful and subjective measure, encompassing the interplay between expectations and the actual experience of existence [1]. Despite health being recognized as a principal contributor, the overall concept of QoL transcends the simple estimation of physical and mental states. It includes financial, interpersonal, societal, recreational and fulfilment aspects of living [2] against a given cultural background and value system [3]. Proper QoL facilitates reaching full individual potential as well as being able to be translated to tangible epidemiological results, such as a lower mortality risk [4]. Therefore, promoting good QoL, irrespective of the life stage, has been recognized as a challenge by major health organizations globally [5–7].

One of the symptoms that could markedly compromise individual QoL during an epidemiological crisis is health anxiety [8]. This term refers to a continual, unfounded and excessive fear of a possible medical condition. It may overlap with or underlie a wide range of anxiety disorders, such as, for instance, obsessive–compulsive disorder or somatic symptom disorder [9]. Preoccupation with health-related worry or misperception of bodily symptoms may trigger a number of safety behaviors, including the excessive use or avoidance of medical services [10]. The persistence of these behaviors reinforces them and serves as a risk of severe impairments in daily functioning.

Notably, one of the factors decreasing anxiety levels may be perceived social support [11]. The term social support refers to the health-promoting dimensions of human interactions. Received social support draws upon the objective quantity and quality of the social support provided. On the other hand, perceived social support is conceptualized as a self-evaluation of provided support and individual satisfaction with such support [12]. Being mindful of key differences between those terms is crucial, as the correlation between received and perceived social support is not necessarily obvious [13,14]. Notably, perceived social support is a more stable yet modifiable measure, anchored in one's personality structure [15,16], and was found to predict mental health to a greater extent than objective social support [13]. The pivotal role of interpersonal relations up against an epidemiological crisis was mirrored in the careful use of pandemic-related nomenclature. For example, it has been advised to replace "social isolation" and "social distancing" with "physical distancing" not to discourage connectedness [17–19]. Data regarding the directionality of prediction between perceived social support and anxiety remains relatively scarce. One scenario is that low-perceived social support may increase the level of anxiety [20]. However, from the perspective of the cognitive–behavioral theory [21], mutual interactions can appear between both constructs as they relate to certain cognitive schemas that result in particular outcomes, such as, for instance, anxiety. Adding the continuous nature of perceived social support, the effect of health anxiety on perceived social support could be anticipated and addressed. Moreover, perceived social support was observed to be an independent predictor of quality of life [22].

Staying in touch without making actual contact would not be possible if not for the internet. Apart from the apparent advantages of online interactions [23], such as buffering anxiety among the isolated [24] and the lonely [25], the negative backlash of the massive pandemic-related information exchange is not to be overlooked. Vismara et al. [26] analyzed a sample of 572 internet users and concluded that the internet was the most popular source to look for medical information amid the COVID-19 pandemic. What is more, the surge in such searches was found in almost one-third of the respondents since the pandemic outbreak. Some internet users may start searching for valid medical sources and gradually distance themselves from evidence-based data [27]. Amateur and emotion-saturated health information was observed to have varied and adverse effects on mental health [28,29] in predisposed individuals. Anxiety-triggered, persistent and unrestrained searching for medical information on the internet connected with lasting or even increased distress is described as cyberchondria [27,30]. Cyberchondria was found to be a behavioral pattern conceptually relevant to health anxiety, hypochondriasis, general anxiety, anxiety about COVID-19, metacognitive beliefs about anxiety, obsessive–compulsive disorder and problematic usage of the internet [26,31]. However, the overlap of cyberchondria and health anxiety deserves special emphasis. Even though the correlation between health anxiety and cyberchondria can be supported by the meta-analysis performed by McMullan et al. [32], the temporal precedence and directionality of their relationship are debatable. Menon et al. [33] suggests that health anxiety is not a sine qua non factor for cyberchondria, as well as it not being confirmed that cyberchondria is a risk factor or a maintaining factor for health anxiety. In this light, cyberchondria and health anxiety should be treated as separate phenomena [33], and their relationship may be potentially bilateral. Nevertheless, minding the fact that the recent study by Nadeem et al. [34] shows that health anxiety is a positive predictor of cyberchondria and anxious individuals are more prone to search the internet for medical data [35,36], the examination of health anxiety was prioritized as a predictor variable needing to be highlighted.

Moreover, the importance of age, gender and education with reference to the aforementioned constructs is supported by the state-of-the-art. As the styles of internet use may be age-dependent [37], the older population could be less prone to cyberchondria [38,39]. On the other hand, the onset of severe health anxiety is more prevalent in senior populations [40]. The impact of perceived social support was observed to vary between different age groups [41]. Additionally, internet use and health anxiety patterns may also be related

to gender and education [42,43]. Atkinson et al. [44] propose that educated females are more willing to search for medical data on the internet compared to males and those without bachelor's degrees. Moreover, some studies imply higher cyberchondria severity within females [38,45].

Associations between cyberchondria and quality of life are novel objects of interest [46–49] and seek further examination. Additionally, although there is evidence that a high level of health anxiety is associated with low QoL, the exact mechanisms underlying this association remain unknown. A better understanding of this matter might help to develop interventions aiming to improve the general and psychological well-being of individuals experiencing health anxiety. Therefore, in this study, we investigated the mechanisms linking health anxiety with QoL. Specifically, we tested the hypothesis that the association between health anxiety and QoL is mediated by cyberchondria and perceived social support (Figure 1).

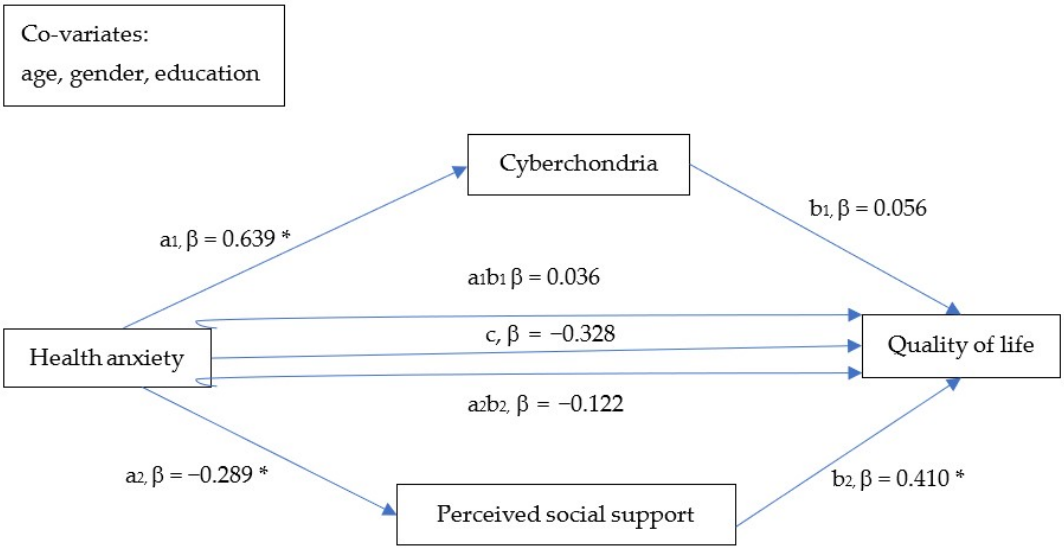

Figure 1. The multiple mediation model tested in the study. Significant effects (95% CI did not include zero) were marked with asterisks.

2. Materials and Methods

2.1. Participants

The cross-sectional online survey was distributed between 16 May 2020 and 29 December 2020 in Poland. The snowball sampling method was applied to involve an adult sample of the Polish population of internet users. This technique enabled the prompt collection of sensitive and confidential data regardless of pandemic-related restrictions. The questionnaires were collected in line with the computer-assisted web interview (CAWI) method [50]. They were spread via social media, e-mail addresses and, to a lesser extent, using social backgrounds of the researchers. Participants were informed about its confidential and anonymous character. This information was stated at the very beginning of the questionnaire. Participants confirmed reaching adulthood as well as being familiar with the study's description, goal and terms by submitting a filled survey. Only completed questionnaires were analyzed. The Ethics Committee at Wroclaw Medical University (Poland) approved the study protocol (approval number: 286/2020). The study was performed in agreement with the principles of the Declaration of Helsinki. The paper's structure is consistent with STROBE statements for reporting cross-sectional studies [51].

2.2. Measures

2.2.1. The Quality of Life Scale (QOLS)

The Polish version of the QOLS, developed by Burckhardt [52,53] is a 16-item, self-administered questionnaire. It transcends health-related quality of life as it explores 5 conceptual categories: material and physical well-being (items 1 and 2), relationships with other people (items 3, 4, 5 and 6); social, community and civic activities (items 7 and 8); personal development and fulfillment (items 9, 10, 11 and 12) and recreation (items 13, 14, 15 and 16). Possible answers range on a 7-point scale from delighted (7) to pleased (6), mostly satisfied (5), mixed (4), mostly dissatisfied (3), unhappy (2) and terrible (1). The total score ranges from 16 to 112, with higher scores indicating better QoL. The total score was found to correlate with both the physical health status as well as disease measures [52]. Cronbach's alpha was 0.93 in the present study.

2.2.2. The Short Health Anxiety Inventory (SHAI)

The Polish adaptation of the SHAI [54,55] is a 16-item, self-reported questionnaire recording two categories of hypochondriasis: illness likelihood (IL) and negative consequences of an illness (NC). However, the total score can also be considered. Each item is based on four statements related to the preceding 6 months: no symptoms (0), mild symptoms (1), severe symptoms (2) and very severe symptom (3) of clinical hypochondriasis. An optimal cut-off score was established at 20 points and could be characterized by a sensitivity of 79.3% and specificity of 78.0% in differentiating hypochondriasis from other anxiety disorders. Cronbach's alpha of the Polish adaptation was described as excellent, as it exceeded 0.90 [54]. In the current research, it was estimated at 0.92.

2.2.3. Cyberchondria Severity Scale (CSS)

The CSS is a 33-item self-report that enables the complex assessment of cyberchondria [39,56]. Items are grouped in 5 subscales that include: compulsion (items 3, 6, 8, 12, 14, 17, 24 and 25), distress (items 5, 7, 10, 20, 22, 23, 29 and 31), excessiveness (item 1, 2, 11, 13, 18, 19, 21 and 30), reassurance (items 4, 15, 16, 26, 27 and 32) and mistrust of medical professionals (items 9, 28 and 33). The answers are based on a 5-point Likert scale (1—never; 2—rarely; 3—sometimes; 4—often; and 5—always). Cronbach's alpha for the Polish adaptation was consistent with the original version [56] and ranged between 0.75 and 0.95. It was evaluated to be 0.90 in this study.

2.2.4. The Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS is a 12-item measure of perceived social support perceived from one's inner circle [57,58]. The items are grouped into three subscales regarding the source of the support: family, friends and significant others. Answers are based on a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). Total and subscale scores can be calculated. Greater scores indicate higher perceived social support. Cronbach's alpha for the Polish adaptation was established at 0.893 [58]. In our research, it was calculated to be 0.94.

2.3. Statistics

Associations between continuous variables were tested with two-tailed Pearson correlation. The Kolmogorov–Smirnov test was used to analyze the normality of data distribution. Results of bivariate tests were considered significant if the p-value was <0.05. The PROCESS macro [59] was used to test parallel mediation models (Figure 1). Health anxiety was included as an independent variable and quality of life was an outcome variable. Cyberchondria and perceived social support were included as mediators. The mediation analysis aimed to explore the direct effects of health anxiety on cyberchondria (a1), perceived social support (a2) and quality of life (c). Moreover, such effects were investigated regarding cyberchondria and quality of life (b1), as well as perceived social support and quality of life (b2). Thereafter, the indirect effects of health anxiety on quality of life through cyberchondria (a1b1) and perceived social support (a2b2) were investigated. Age, gender

and education were added as covariates. Direct and indirect effects were examined using bootstrap calculation with 5000 samples. Mediation was considered significant if the 95% CI of an indirect effect did not include a zero. Before performing mediation analyses, assumptions of the linear regression analysis were tested. These included: (1) linearity of the relationship between independent variables and dependent variables; (2) normal distribution of the residuals; (3) homoscedasticity of the residuals; (4) uncorrelatedness of the residuals; (5) absence of multicollinearity; (6) a lack of extreme outliers. Linearity was assessed by inspecting the partial scatterplots. A normal distribution of the residuals was checked with visualizing histograms and P–P plots. Homoscedasticity was analyzed by plotting the regression studentized residuals and the regression standardized predicted values. The Durbin–Watson statistics were tested to analyze the uncorrelatedness of residuals. Values between 1.5 and 2.5 were interpreted as indicating no first-order autocorrelation [60]. Multicollinearity was evaluated using the variance inflation factor (VIF). VIF values > 4 were considered as showing significant multicollinearity [61]. Finally, case-wise diagnostics were carried out and standardized residuals located outside 3 standard deviations were interpreted as outliers. All analyses were performed with Statistical Package for Social Sciences, version 20 (SPSS Inc., Chicago, IL, USA) [62].

3. Results

The descriptive statistics of the study sample are presented in Table 1. Data from 538 surveyed individuals were analyzed. The mean age of the respondents was 36.64 years (SD = 12.55; range = 18–75). There was a predominance of females and subjects with higher education.

Table 1. General characteristics of the sample (n = 538).

Variable	n (%)	Mean ± SD	Median (Range)	Skewness	Kurtosis	Kolmogorov–Smirnov Test
Age, years		36.65 ± 12.55	34.0 (59.0)	0.768	−0.006	$p < 0.001$
Gender, males	100 (18.6)					
Education, higher	422 (78.4)					
CSS-PL total score		60.90 ± 17.58	57.5 (99.0)	0.817	0.643	$p = 0.191$
SHAI total score		15.53 ± 8.80	14.0 (51.0)	1.104	1.693	$p = 0.103$
MSPSS total score		70.23 ± 15.75	76.0 (72.0)	−1.408	1.709	$p = 0.058$
QOLS total score		79.67 ± 15.13	80.5 (91.0)	−0.660	0.991	$p = 0.088$

Abbreviations: SHAI—the short health anxiety inventory; CSS—cyberchondria severity scale; MSPSS—the multidimensional scale of perceived social support; QOLS—the quality of life scale.

The bivariate correlations are presented in Table 2. Health anxiety was significantly and positively correlated with cyberchondria. Moreover, there were significant negative correlations between health anxiety and perceived social support and QoL. In turn, QoL was significantly and positively correlated with perceived social support, as well as being negatively correlated with health anxiety and cyberchondria. In addition, older age was associated with greater QoL. A gender-sensitive analysis showed no significant correlation between perceived social support and health anxiety, or between perceived social support and cyberchondria among males. This contrasted with the significant correlation between these two constructs in a female group, as well as in the whole sample.

The bivariate correlations regarding education level can be found in Table 3. QoL significantly correlated with age, and cyberchondria did not correlate with perceived social support in the higher educated, unlike other education groups.

Table 2. Bivariate correlations.

	General (n = 538)					Females (n = 438)					Males (n = 100)				
	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.
1.Age	1					1					1				
2.SHAI	−0.048	1				−0.061	1				−0.072	1			
3.MSPSS	−0.015	−0.333 **	1			−0.029	−0.331 **	1			0.156	−0.190	1		
4.CSS	0.066	0.574 **	−0.141 **	1		0.031	0.627 **	−0.113 *	1		0.010	0.662 **	−0.024	1	
5.QOLS	0.161 **	−0.439 **	0.501 **	−0.199 **	1	0.154 **	−0.453 **	0.523 **	−0.170 **	1	0.254 *	−0.331 **	0.480 **	−0.282 **	1

* $p < 0.05$, ** $p < 0.01$; abbreviations: SHAI—the short health anxiety inventory; CSS—cyberchondria severity scale; MSPSS—the multidimensional scale of perceived social support; QOLS—the quality of life scale.

Table 3. Bivariate correlations regarding education.

	Higher Education (n = 422)					Other Education (n = 422)				
	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.
1.Age	1					1				
2.SHAI	−0.053	1				−0.041	1			
3.MSPSS	0.038	−0.263 **	1			−0.142	−0.363 **	1		
4.CSS	0.041	0.612 **	−0.084	1		0.003	0.743 **	−0.191 *	1	
5.QOLS	0.163 **	−0.382 **	0.465 **	−0.153 **	1	0.128	0.560 **	0.542 **	−0.415 **	1

* $p < 0.05$, ** $p < 0.01$; abbreviations: SHAI—the short health anxiety inventory; CSS—cyberchondria severity scale; MSPSS—the multidimensional scale of perceived social support; QOLS—the quality of life scale.

The results of the mediation analysis are shown in Table 4. All assumptions of the multiple regression analysis were met. There were significant direct effects of health anxiety on cyberchondria and perceived social support. Similarly, the direct effect of perceived social support on QoL was also found to be significant. However, cyberchondria was not directly associated with QoL. There was a significant indirect effect of health anxiety (through social support) on QoL. In turn, the indirect effect of health anxiety on QoL (through cyberchondria) appeared to be insignificant.

Table 4. Results of mediation analysis.

	β	SE	95% CI	
			LLCI	ULCI
Direct effect of SHAI on CSS (a_1)	0.639 *	0.034	0.573	0.705
Direct effect of SHAI on MSPSS (a_2)	−0.298 *	0.042	−0.380	−0.217
Direct effect of CSS on QoL (b_1)	0.056	0.045	−0.032	0.144
Direct effect of MSPSS on QoL (b_2)	0.410 *	0.036	0.338	0.481
Direct effect of SHAI on QoL (c)	−0.328 *	0.047	−0.421	−0.236
Indirect effect (through CSS) of SHAI on QoL (a_1b_1)	0.036	0.030	−0.025	0.095
Indirect effect (through MSPSS) of SHAI on QoL (a_2b_2)	−0.122 *	0.025	−0.175	−0.078
Total indirect effect of SHAI on QoL ($a_1b_1 + a_2b_2$)	0.086 *	0.041	−0.167	−0.009

Significant effects (95%CI does not include zero) were marked with asterisks; covariates: age, gender and education; abbreviations: SHAI—the short health anxiety inventory; CSS—cyberchondria severity scale; MSPSS—the multidimensional scale of perceived social support; QOLS—the quality of life scale.

4. Discussion

The main ambition of this cross-sectional study was to explore the relationships between QoL, health anxiety, cyberchondria and perceived social support. Particular attention was paid to if cyberchondria and perceived social support mediated associations between health anxiety and QoL. Findings from the present study implied that health anxiety negatively affects QoL both directly and indirectly through poor perceived social support. In other words, perceived social support partially mediates the association

between health anxiety and QoL. Although cyberchondria was not found to serve as a significant mediator between health anxiety and QoL, it appeared to be associated with health anxiety.

Our study explored cyberchondria and health anxiety as separate but strongly correlated phenomena. It aligned with existing evidence suggesting that health anxiety is essential for the development of severe cyberchondria [63]. Having stated that, health anxiety and cyberchondria may have similar but not identical properties. Despite treating cyberchondria as a distinct construct of health anxiety, it still sparks debate, with current research supporting various effects of those concepts on QoL. The literature consistently confirms that health anxiety [64], hypochondriasis [65], obsessive–compulsive disorder [66], generalized anxiety, panic disorders [67] or internet addiction [68] impair life quality, although this was not evident in the case of cyberchondria in the current study. This observation stands in line with the study by Mathes et al. [46], who concluded that individuals experiencing cyberchondria did not experience impaired quality of life. A recent study by Ambrosini et al. [49] somehow complemented this observation by indicating that the impact of cyberchondria on QoL might be fully mediated by obsessive–compulsive manifestations, as well as Internet addiction. These mediators were also described as significant when relations between cyberchondria and health anxiety were noted. By this rationale, it could be hypothesized that the element of compulsive internet searching for medical information could serve as an unadaptive coping mechanism fueled by reassurance seeking [27].

What is more, the model based on the cognitive–behavioral theory suggests that such transient feelings of relief right after receiving reassurance may, paradoxically, assist in sustaining such maladaptive behavior underpinned by health anxiety [69]. Therefore, the compulsive features of cyberchondria may be crucial in determining the impact of cyberchondria on QoL. Of note, the actual consequences of searching the internet for solace remain unpredictable, as 40% of individuals may encounter escalated anxiety [70]. From a different angle, Vismara et al. [26] observed that cyberchondria negatively correlated with QoL. The authors found that individuals with baseline poor QoL could be more prone to develop cyberchondria, or that cyberchondria may impair QoL.

At the same time, Rahme et al. [48] found social support to be a substantial factor in mitigating the mentioned factors' detrimental effects on QoL. This remark corresponded, to the same extent, with our results, showing that perceived social support mediated the association of health anxiety with QoL. Such a relation between health anxiety and perceived social support provided a novel finding, as well as complemented the existing literature on the anxiety spectrum and perceived social support. It can be analyzed in two ways, regarding its physiological and psychological background. Enhanced support against a stressor may stem from the oxytocin-moderated biobehavioral reaction that facilitates mutual protection and creates novel social networks to reinforce survival [71,72].

To put it differently, in the face of a threat, people tend to affiliate with others to minimize stress, anxiety and affective responses that can potentially impair QoL. From the psychological point of view, social support supplies a person with resources critical to cope with a crisis [73] and facilitates resilience [74]. It covers delivering emotional, informational, material, instrumental and spiritual help [75]. Moreover, in the current study, significant gender-related differences were found when correlations between perceived social support and cyberchondria, as well as perceived social support and health anxiety, were concerned. Both cyberchondria and health anxiety were not found to correlate significantly with perceived social support in the male group in contrast with females. It could be suspected that such divergences relate to varied socialization and expectations regarding roles among men and women [76].

Certain limitations characterized the current study. The cross-sectional design did not allow us to draw casual conclusions. That stated, the study should be replicated using longitudinal or experimental designs. Self-assessments may have posed a risk of both

information bias. Likewise, snowball sampling may have limited the study's validity due to a lack of a random selection of participants.

Additionally, even though online data sampling used in the present study had the advantage of collecting large datasets [50], the exact number of individuals approached for participation was not recorded. Thus, the response rates remain unknown. It is also important to note that most responses were received from women and people with higher education. The multidimensional and complex nature of the explored phenomena could potentially be related to a residual confounding bias. For instance, high baseline health anxiety is not a prerequisite for seeking medical data online [77–79]. Hence, the study could have been extended to explore trait anxiety. It seems reasonable to incorporate this variable into future research, as perceived social support corresponds to personality traits. There are indications that this approach could be well founded also regarding cyberchondria [80,81]. The current research was triggered by the massive and rapid surge in Internet use as a reaction to the global health crisis.

Nonetheless, the explored phenomena might have been sensitive to pandemic-related circumstances such as the limited provision of daily services or altered social interaction patterns. Minding the fact that the data were collected within a few months, it could be speculated that the experiences of the predisposed individuals were not linear during the study period. Having stated that, the results should be interpreted and generalized with caution. As a final point, even though the current study was performed during the COVID-19 pandemic, it was not based on any objective pandemic-related measures. Moreover, the administered questionnaires, apart from SHAI, did not specify a particular period during which the individuals experienced the measured constructs. The current research did not foster any conclusions regarding relations between health anxiety, perceived social support, cyberchondria, quality of life and the current epidemiological crisis. However, exploring such associations might be a promising research direction.

5. Conclusions

In conclusion, the main findings of this study implied that health anxiety can contribute to low QoL directly and indirectly through a lower use of social support resources. Enhancing the individual perception of having sufficient material and psychological support may mitigate the detrimental effect of health anxiety on QoL. These findings could be used to inform public policies that aim to create support strategies for individuals with high levels of health anxiety. However, additional studies, especially those adopting longitudinal designs based on representative populations and exploring a wide range of psychopathology and disrupted behavioral patterns, are still needed to confirm causal associations.

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7. Podsumowanie wyników

Pierwsze badanie w cyklu Ciułkowicz et al. (2021) miało na celu identyfikację najczęstszych kombinacji strategii radzenia sobie w grupie aktywnych zawodowo respondentów. Dodatkowo, uwzględniono czynniki indywidualne oraz strategie radzenia sobie, które istotnie różnicowały występowanie i nasilenie objawów psychopatologicznych pośród pracowników sektorów medycznego i niemedycznego. Określono także zasadnicze determinanty obserwowanej psychopatologii.

W wyniku analiz wyróżniono trzy klastry strategii radzenia sobie respondentów. Pierwszy, niespecyficzny, objął osoby, które zdobyły mniej punktów w stosunku do średniej dla danej strategii radzenia sobie. Innymi słowy, klaster ten charakteryzował się brakiem wiodącej strategii radzenia sobie. Drugi klaster został określony jako nieadaptacyjny, ponieważ skupiał uczestników, których wyniki sugerowały korzystanie z takich strategii jak zaprzeczenie, wyładowanie, zażywanie substancji psychoaktywnych, zaprzestanie działań czy obwinianie siebie. Klaster adaptacyjny natomiast zrzeszył uczestników korzystających z aktywnego radzenia sobie, planowania, pozytywnego przewartościowania, a także poszukiwania emocjonalnego i instrumentalnego wsparcia.

Obserwowano istotne różnice pomiędzy respondentami w poszczególnych klastrach względem wieku, płci, miejsca zamieszkania, wykonywanego zawodu, stażu pracy, liczby godzin przepracowanych na przestrzeni tygodnia, posiadania dzieci oraz subiektywnej oceny adekwatności środków ochrony osobistej w miejscu pracy. Klastry różniły się także manifestacją objawów psychopatologicznych. Wyniki użytkowników przyporządkowanych do klastra nieadaptacyjnego w skalach GHQ-28 oraz IES-R, zarówno w przypadku wyniku całkowitego, jak i poszczególnych podskal, były istotnie wyższe od tych uzyskanych przez respondentów z klastrów adaptacyjnego i niespecyficznego. Innymi słowy, można uznać, że uczestnicy badania stosujący kombinację strategii radzenia sobie określoną jako nieadaptacyjną istotnie częściej manifestowali klinicznie objawy somatyczne, lęk i bezsenność, dysfunkcję

społeczną oraz nasilone objawy depresyjne czy też zachowania odpowiadające zespołowi stresu pourazowego, takie jak intruzja, pobudzenie i unikanie. Kiedy porównano klaster adaptacyjny z niespecyficznym, odnotowano istotnie wyższe wyniki GHQ-28 w zakresie wyniku całkowitego jak i podskal dotyczących dysfunkcji społecznej oraz nasilonych objawów depresyjnych w klastrze nieadaptacyjnym. Z kolei, unikanie uwzględnione w skali IES-R istotnie częściej obserwowano w klastrze adaptacyjnym niż niespecyficznym.

Zarówno medycy, jak i niemedycy należący do klastra nieadaptacyjnego cechowali się największym ryzykiem manifestacji objawów mierzonych GHQ-28 i IES-R w porównaniu do klastra niespecyficznego oraz adaptacyjnego. W grupie medyków przynależność do klastra adaptacyjnego wiązała się z istotnie niższymi wynikami całkowitymi, a także podskal dotyczących objawów somatycznych, dysfunkcji społecznej, jak i nasilonych objawów depresyjnych w GHQ-28 w porównaniu do klastra niespecyficznego. Jednocześnie, wyniki pozytywne GHQ-28 występowały wśród medyków istotnie częściej w klastrze adaptacyjnym niż niespecyficznym. Nie zaobserwowano takiej zależności pośród pracowników niemedycznych. Pracownicy niemedyczni skupieni w klastrze adaptacyjnym zdobyli natomiast istotnie niższe wyniki w podskalach dotyczących dysfunkcji społecznej i nasilonych objawów depresyjnych w porównaniu do klastra niespecyficznego. Nie odnotowano istotnych różnic pomiędzy wynikami IES-R, kiedy porównano klastry adaptacyjny i niespecyficzny zarówno w grupie medyków, jak i nie medyków.

Jako jedyną istotną determinantę wyższych wyników całkowitych oraz wszystkich podskal GHQ-28 i IES-R została wskazana płeć żeńska, zaś jedyną zmienną związaną z niższym wynikiem całkowitym GHQ-28, objawami somatycznymi oraz lękiem i bezsennością było wykonywanie zawodu niemedycznego. Co więcej, posiadanie dzieci determinowało niższe wyniki w podskali obejmującej nasilone objawy depresyjne. Skupiając się na strategiach radzenia sobie, istotnie wyższe wyniki całkowite i podskal GHQ-28 oraz IES-R związane były z obwinianiem się, zaprzestaniem działań, zażywaniem substancji psychoaktywnych i zaprzeczaniem.

Z kolei istotnie niższe wyniki całkowite oraz podskal GHQ-28 i IES-R determinowało stosowanie pozytywnego przewartościowania, a także szukania wsparcia emocjonalnego. Istotnie wyższy wynik całkowity i podskal IES-R determinowało wyładowanie, zajmowanie się czymś innym i zwrot ku religii. Ważnymi z perspektywy projektowania działań pomocowych są obserwacje determinowania intruzji przez stosowanie aktywnego radzenia sobie, a także brak znaczenia w odniesieniu do wyników GHQ-28 i IES-R planowania i wsparcia instrumentalnego. Radzenie sobie przez akceptację determinowało niższą dysfunkcję społeczną.

Podsumowując, używanie kombinacji strategii radzenia sobie skupionych w klastrze nieadaptacyjnym wiązało się z częstszą i bardziej nasiloną manifestacją objawów psychopatologicznych w porównaniu do klastrów adaptacyjnego i niespecyficznego. Stosowanie strategii określonych jako niespecyficzne, wiązało się natomiast z częstszym występowaniem nasilonych objawów depresyjnych i dysfunkcji społecznej w stosunku do klastra adaptacyjnego. Przeprowadzone analizy sugerują, że stosowanie danej pojedynczej strategii radzenia sobie nie warunkuje ostatecznego charakteru odpowiedzi jako adaptacyjnej czy nieadaptacyjnej w grupie badanej osób aktywnych zawodowo. Jest to styczne z danymi literaturowymi sugerującymi celowość analizy pewnych profili (klastrów) strategii radzenia sobie (Wijndaele et al., 2007; Juczyński & Ogińska-Bulik, 2009; Juczyński & Ogińska-Bulik, 2010; Eisenbarth, 2012; Lai et al., 2020; Umcu & Lee, 2020; Justo-Alonso et al., 2020; Forte et al., 2020). Dodatkowo, zawód niemedyczny determinował niższe wyniki całkowite oraz podskal dotyczących objawów somatycznych, a także bezsenności i lęku GHQ-28 w porównaniu do klastra medycznego, co pozostaje spójne z licznymi przesłankami podkreślającymi szczególne obciążenie pracowników ochrony zdrowia w czasie kryzysu (np. Cai et al., 2020; Kang et al., 2020, Williamson et al., 2020). Płeć żeńska okazała się jedyną zmienną socjodemograficzną determinującą pojawienie się istotnych klinicznie objawów. Jest to styczne z pracą Wang, et al. (2020) sugerującą większy wpływ pandemii na zdrowie kobiet z uwzględnieniem większej gotowości na reakcje lękowe, objawy depresyjne, bezsenność, zaburzenia adaptacyjne czy zespół

stresu pourazowego. Podobnie w przypadku kobiet pracujących w zawodach medycznych - stwierdzono u nich bardziej nasilone objawy depresyjne, zaburzenia snu, uczucie niepewności, lęk przed zakażeniem czy odpowiedzi stresowe w porównaniu do medyków płci męskiej (De Kock et al., 2021).

Rezultaty przeprowadzonego badania należy interpretować w świetle pewnych ograniczeń jak stosunkowo niska liczebność badanej próby. Wyższy niż w populacji ogólnej odsetek kobiet w badaniu jest częstym zjawiskiem w badaniach populacyjnych, niemniej jest to utrudnienie często notowane w badaniach ankietowych, gdyż kobiety istotnie częściej decydują się na wzięcie w nich udziału w porównaniu do mężczyzn. Dodatkowo, zebrane dane dotyczące wykonywanego przez pracowników niemedycznych zawodu okazały się nierzadko zbyt ogólnikowe, aby ulokować je w kontekście pandemii, zwłaszcza na początkowych etapach kryzysu, z uwzględnieniem narażenia na zakażenie.

Drugie badanie (Ciułkowicz et al., 2022a) skupiło się na określeniu powszechności zjawiska cyberchondrii, a także identyfikacji czynników socjodemograficznych, klinicznych oraz związanych z pandemią w grupie badanej dorosłych użytkowników internetu. Zaobserwowano, że około 30,9% ankietowanych manifestowało znaczne nasilenie cyberchondrii oraz lęku o zdrowie. Dane dotyczące rozpowszechnienia cyberchondrii pozostają bardzo ograniczone oraz niejednorodne (Wijesinghe et al., 2019; Akhtar & Tayyeba, 2020; Makarla et al., 2019; Shailaja et al., 2020; Aulia et al., 2020) co ma prawdopodobnie związek, między innymi, z brakiem spójnej i uniwersalnej definicji tego zjawiska czy nieustaleniem punktu odcięcia dla różnojęzycznych adaptacji skali CSS.

Klastry adaptacyjny, nieadaptacyjny oraz niespecyficzny istotnie różniły się między sobą w zakresie aktywności zawodowej i towarzyskiej na przestrzeni ostatniego miesiąca, korzystaniem z konsultacji medycznych online, a także większym subiektywnym ograniczeniem dostępu do opieki zdrowotnej z powodu pandemii, które częściej notowane były w klastrze charakteryzującym się niskim lękiem

o zdrowie i cyberchondrią. W klastrze cechującym się nasiloną cyberchondrią i lękiem o zdrowie istotnie częściej zgłaszano przewlekłe choroby psychiczne oraz większą liczbę kontaktów z ochroną zdrowia, zarówno psychiatryczną, jak i somatyczną. Niektórzy autorzy sugerują, że doświadczanie nasilonych objawów związanych z cyberchondrią może doprowadzać do podniesienia się wartości ciśnienia krwi, lęku, napięcia mięśni (Sarkar, 2020). Pawar et al. (2022) natomiast zauważyli istotny związek pomiędzy cyberchondrią a przebytym zawałem mięśnia sercowego. W naszym badaniu obecność chorób somatycznych, w przeciwieństwie do psychicznych, nie różnicowała jednak powstałych klastrów.

Wyniki analizy nie potwierdziły związku pomiędzy wiekiem, płcią, poziomem edukacji, a nasileniem objawów cyberchondrii i lęku o zdrowie. Natomiast nieaktywność zawodowa, przewlekłe choroby psychiczne oraz subiektywnie ograniczony dostęp do opieki zdrowotnej z powodu pandemii zostały natomiast wskazane jako determinanty nasilonego lęku o zdrowie i cyberchondrię. Pomimo tego, że nasze spostrzeżenia są tożsame z wynikami m.in. Doherty-Torstick (2016) czy Bajcar et al. (2019), dane literaturowe dotyczące znaczenia wieku oraz płci w rozwoju cyberchondrii pozostają niespójne. Część autorów postuluje rolę płci żeńskiej oraz młodszego wieku (np. Serra-Negra et al., 2022) lub odwrotnie, wskazuje większą gotowość do manifestowania kompulsywności związanej z cyberchondrią u mężczyzn (Khazaal et al., 2021). Kurcer et al. (2022) oprócz płci żeńskiej wskazuje także samotne mieszkanie w mieście. Vismara et al. (2022b) zaś, zgodnie z linią naszych wyników, wymienia choroby psychiczne jako właściwość populacji szczególnie narażonej na wystąpienie objawów cyberchondrii. Istotnie większe nasilenie odnotowano także pośród osób z rodzinnym obciążeniem chorobami psychicznymi oraz w grupie przyjmującej benzodiazepiny i stabilizatory nastroju (Vismara et al., 2022a). Vismara et al. (2022b) wymienia również zwiększone zaangażowanie w mediach społecznościowych i akceptację informacji znalezionych w internecie, a także przytłoczenie nadmiarem informacji. Sezer et al., 2022 sugeruje także rolę czasu spędzonego w internecie oraz spożycie alkoholu. Skupiając

się natomiast na technologicznych aspektach sprzyjających wystąpieniu cyberchondrii, Yang et al., (2022) podkreślił znaczenie indywidualnego metapoznania, niepewności związanej z niepotwierdzonymi informacjami czy korzystanie z tendencyjnych informacji selekcjonowanych przez algorytmy. Ponadto, uzupełniając niejako nasze obserwacje, Karakas et al., (2022) odnotował, że pośród osób z nasilonymi objawami cyberchondrii znajdowały się częściej osoby przyjmujące leki bez konsultacji z lekarzem w czasie kryzysu związanego z SARS-CoV-2. Oniszczenko (2021) uzupełnił listę predyktorów cyberchondrii o lękowy temperament i lęk przed zakażeniem SARS-CoV-2.

Na podstawie otrzymanych wyników można podejrzewać, iż cyberchondria jest potencjalnie ważnym problemem z zakresu zdrowia publicznego, ponieważ odpowiedzi istotnej części respondentów sugerują znaczne jej nasilenie. Kluczowe determinanty nasilenia cyberchondrii korespondują natomiast ze sferami szczególnie narażonymi na indywidualną destabilizację w czasie pandemii takimi jak stabilność zatrudnienia, zdrowie psychiczne czy dostępność do usług medycznych.

Interpretacja przedstawionych wyników wymaga jednak ostrożności. Przede wszystkim warto zwrócić uwagę na fakt, że zbieranie danych miało miejsce w czasie stopniowego łagodzenia restrykcji epidemicznych w Polsce. W konsekwencji, uzyskane wyniki mogą odpowiadać adekwatniej danym sprzed kryzysu epidemicznego związanego z SARS-CoV-2. Ponadto, limitacje związane z przekrojowym charakterem badania, grupą badaną zdominowaną przez wysoko wykształcone kobiety oraz nieuwzględnienie w analizach czynników interpersonalnych oraz intrapersonalnych takich jak cechy osobowości może zostać uwzględnione przy projektowaniu kolejnych badań o podobnej tematyce celem zwiększenia ich metodologicznej jakości.

Analizy wykonane na potrzeby trzeciego badania Ciułkowicz et al. (2022b) wykazały, że lęk o zdrowie wiązał się proporcjonalnie z cyberchondrią, zaś odwrotnie proporcjonalnie ze spostrzeganym wsparciem społecznym i jakością życia.

Konsekwentnie, jakość życia wiązała się proporcjonalnie ze spostrzeganym wsparciem społecznym, a odwrotnie proporcjonalnie z lękiem o zdrowie i cyberchondrią. Po uwzględnieniu płci zaobserwowano w grupie mężczyzn brak związku spostrzeganego wsparcia społecznego z lękiem o zdrowie oraz z cyberchondrią, co kontrastuje z wynikami uwzględniającymi całą grupę czy grupę respondentek. Starszy wiek wiązał się z lepszą jakością życia grupy badanej. Cyberchondria natomiast nie wiązała się ze spostrzeganym wsparciem społecznym u osób z wyższym wykształceniem w przeciwieństwie do osób z niższym wykształceniem.

Otrzymane wyniki analizy mediacji wykazały, że lęk o zdrowie wpływał na cyberchondrię i spostrzegane wsparcie społeczne. Spostrzegane wsparcie społeczne determinowało natomiast poziom jakości życia. Potwierdzono także pośredni związek lęku o zdrowie, poprzez spostrzegane wsparcie społeczne, z jakością życia. Nie wykazano jednocześnie bezpośredniego związku cyberchondrii z jakością życia, a także nie zaobserwowano istotnego, pośredniego wpływu lęku o zdrowie, przez cyberchondrię, na jakość życia.

Pomimo tego, że włączanie lęku o zdrowie i cyberchondrii do rozważań jako skorelowane (np. McMullan et al., 2019), a jednak osobne konstrukty nadal pozostaje dość kontrowersyjne, nasze badanie zasugerowało ich odmienny wpływ na jakość życia oraz w pewnym zakresie uzupełnia istniejącą, choć nadal dość ograniczoną bazę danych na ten temat (Mathes et al., 2018; Shailaja et al., 2020; Rahme et al., 2021; Vismara et al. 2021; Ambrosini et al., 2022). Niewyjaśnionym pozostaje jednak w jakim mechanizmie i kontekście cyberchondria może potencjalnie negatywnie wpływać na jakość życia.

Wyniki naszej analizy wnoszą także nowy wątek sugerujący, że działania nastawione na wzmacnianie subiektywnego poczucia wsparcia materialnego i psychologicznego mogą zmniejszać negatywne konsekwencje lęku o zdrowie w kontekście jakości życia. Może być to związane z uruchomieniem przez stresor biobehawioralnej reakcji moderowanej oksytocyną, która wspomaga tworzenie siatki społecznej celem

przetrwania kryzysu (Taylor et al., 2000; Millet & Blackwell, 2006). Ma to również swoje uzasadnienie z perspektywy psychologicznej uwzględniając wsparcie społeczne jako zasób (Cohen, 2004; Terzi, 2008). Uwagę zwraca także brak potwierdzenia istotnej korelacji między spostrzeganym wsparciem społecznym a lękiem o zdrowie i cyberchondrią w grupie mężczyzn skłaniają ku refleksji, że w ich planowaniu konieczne jest uwzględnienie różnic w socjalizacji do poszczególnych ról oraz różnorodnych oczekiwań wobec poszczególnych płci. Wsparcie społeczne łączone jest także z lepszym zdrowiem psychicznym. Jednak Monistrol-Mula et al. (2022) postuluje, że wpływ stresu związanego z COVID-19 i wsparcia społecznego na jednostkę może różnić się w zależności od wyjściowego stanu psychicznego w tym współchorobowości psychiatrycznej.

Przeprowadzone badanie posiada jednak swoje ograniczenia, przez które jego wyniki należy traktować z dużą ostrożnością. Innymi słowy, powinny zostać one potwierdzone w badaniu podłużnym obejmującym populację spełniającą kryteria reprezentatywności, a także uwzględniających szerszy wachlarz objawów psychopatologicznych i schematów behawioralnych celem potwierdzenia związków przyczynowo-skutkowych.

8. Wnioski

Zaprezentowane wyniki cyklu trzech spójnych tematycznie badań jednoznacznie wskazują, że okres pandemii wiązał się ze znacznym obciążeniem sfery zdrowia psychicznego, destabilizacją systemu opieki zdrowotnej oraz sprzyjał nasileniu objawów psychopatologicznych, w tym objawów cyberchondrii. Bezapelacyjnie był to także czas krytyczny dla utrzymania płynności relacji społecznych, a także dla pracowników wykonujących zawody medyczne.

Wnioski wysnute na podstawie powyższych analiz uzupełniły bazę wiedzy sprzyjającą projektowaniu skuteczniejszych działań wzmacniających prężność psychiczną w dobie kryzysu, a także przyczyniły się do dalszego poznawania

zjawiska cyberchondrii. Bez wątpienia potrzebna jest jednak ich replikacja, optymalnie z zastosowaniem strategii porównań podłużnych.

9. Referencje

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10. Załączniki

10.1 Oświadczenia współautorów prac

prof. dr hab. Joanna Rymaszewska
Katedra Psychiatrii, Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu

Wrocław, 24.11.2022

OŚWIADCZENIE

Oświadczam, że w pracy *Ciułkowicz M, Maciaszek J, Misiak B, Pałęga A, Rymaszewska J, Szcześniak DM. Coping Strategies and Psychopathological Responses Among Medical and Non-medical Professionals - a Cross-Sectional Online Survey. Front Psychiatry. 2021 May 20;12:663224. doi: 10.3389/fpsyt.2021.663224. PMID: 34093277; PMCID: PMC8173082* mój udział polegał na współtworzeniu koncepcji, projektu i metodyki badania, wsparciu merytorycznym interpretacji danych, a także superwizji nad manuskryptem, w tym sprawdzeniu referencji.

Podpis

Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. The Portrait of Cyberchondria-A Cross-Sectional Online Study on Factors Related to Health Anxiety and Cyberchondria in Polish Population during SARS-CoV-2 Pandemic. Int J Environ Res Public Health. 2022 Apr 5;19(7):4347. doi: 10.3390/ijerph19074347. PMID: 35410027; PMCID: PMC8998772* mój udział polegał na współtworzeniu koncepcji badania, opracowaniu jego metodyki, rozpowszechnieniu kwestionariusza, edycji oraz superwizji nad kolejnymi szkicami manuskryptu, zatwierdzeniu ostatecznej jego wersji.

Podpis

Oświadczam, że w pracy Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. Social Support Mediates the Association between Health Anxiety and Quality of Life: Findings from a Cross-Sectional Study. Int J Environ Res Public Health. 2022 Oct 10;19(19):12962. doi: 10.3390/ijerph191912962. PMID: 36232258; PMCID: PMC9566112 mój udział polegał na współtworzeniu koncepcji badania, opracowaniu jego metodyki, rozpowszechnieniu kwestionariusza, edycji oraz superwizji nad kolejnymi szkicami manuskryptu, zatwierdzeniu ostatecznej jego wersji.

Podpis

dr n. med. Dorota Szcześniak, prof. UMW
Katedra Psychiatrii, Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu

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Podpis

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Podpis

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Wrocław, 24.11.2022

OŚWIADCZENIE

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Podpis

Uniwersytet Medyczny we Wrocławiu
KATEDRA PSYCHIATRII
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Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. The Portrait of Cyberchondria-A Cross-Sectional Online Study on Factors Related to Health Anxiety and Cyberchondria in Polish Population during SARS-CoV-2 Pandemic. Int J Environ Res Public Health. 2022 Apr 5;19(7):4347. doi: 10.3390/ijerph19074347. PMID: 35410027; PMCID: PMC8998772* mój udział polegał na tworzeniu konceptualizacji badania, ustalaniu metodologii, przetwarzaniu, analizie i nadzorze danych, tworzeniu pierwotnego oraz kolejnych wersji manuskryptu oraz superwizji.

Podpis

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Podpis

Uniwersytet Medyczny we Wrocławiu
KATEDRA PSYCHIATRII
KLINIKA PSYCHIATRII
kierownik
prof. dr hab. Błażej Misiak

dr n. med. Julian Maciaszek

Katedra Psychiatrii, Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu

Wrocław, 24.11.2022

OŚWIADCZENIE

Oświadczam, że w pracy *Ciułkowicz M, Maciaszek J, Misiak B, Pałęga A, Rymaszewska J, Szcześniak DM. Coping Strategies and Psychopathological Responses Among Medical and Non-medical Professionals - a Cross-Sectional Online Survey. Front Psychiatry. 2021 May 20;12:663224. doi: 10.3389/fpsyt.2021.663224. PMID: 34093277; PMCID: PMC8173082* mój udział polegał na zaprojektowaniu badania z wyznaczeniem głównych przedmiotów zainteresowania badawczego, przeprowadzeniu badania, interpretacji wyników oraz umieszczenie ich w kontekście istniejącej literatury, sporządzenie manuskryptu oraz sprawdzenie poprawności referencji.

Podpis
Julian Maciaszek
LEKARZ
3556072

Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. The Portrait of Cyberchondria-A Cross-Sectional Online Study on Factors Related to Health Anxiety and Cyberchondria in Polish Population during SARS-CoV-2 Pandemic. Int J Environ Res Public Health. 2022 Apr 5;19(7):4347. doi: 10.3390/ijerph19074347. PMID: 35410027; PMCID: PMC8998772* mój udział polegał na tworzeniu konceptualizacji badania, jego przeprowadzeniu, a także sprawdzeniu i edycji kolejnych wersji manuskryptu.

Podpis
Julian Maciaszek
LEKARZ
3556072

Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. Social Support Mediates the Association between Health Anxiety and Quality of Life: Findings from a Cross-Sectional Study. Int J Environ Res Public Health. 2022 Oct 10;19(19):12962. doi: 10.3390/ijerph191912962. PMID: 36232258; PMCID: PMC9566112* mój udział polegał na tworzeniu konceptualizacji badania, jego przeprowadzeniu, a także sprawdzeniu i edycji kolejnych wersji manuskryptu.

Podpis
Julian Maciaszek
LEKARZ
3556072

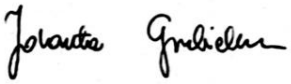
dr n. o zdr. Jolanta Grzebieluch

Katedra Zdrowia Populacyjnego, Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu

Wrocław, 24.11.2022

OŚWIADCZENIE

Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. The Portrait of Cyberchondria-A Cross-Sectional Online Study on Factors Related to Health Anxiety and Cyberchondria in Polish Population during SARS-CoV-2 Pandemic. Int J Environ Res Public Health. 2022 Apr 5;19(7):4347. doi: 10.3390/ijerph19074347. PMID: 35410027; PMCID: PMC8998772* mój udział polegał na tworzeniu konceptualizacji badania, jego przeprowadzeniu, a także sprawdzeniu i edycji kolejnych wersji manuskryptu.

Podpis 

Oświadczam, że w pracy *Ciułkowicz M, Misiak B, Szcześniak D, Grzebieluch J, Maciaszek J, Rymaszewska J. Social Support Mediates the Association between Health Anxiety and Quality of Life: Findings from a Cross-Sectional Study. Int J Environ Res Public Health. 2022 Oct 10;19(19):12962. doi: 10.3390/ijerph191912962. PMID: 36232258; PMCID: PMC9566112* mój udział polegał na tworzeniu konceptualizacji badania, jego przeprowadzeniu, a także sprawdzeniu i edycji kolejnych wersji manuskryptu.

Podpis

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dr n. hum. Anna Pałęga

Katedra Psychiatrii, Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu

Wrocław, 24.11.2022

OŚWIADCZENIE

Oświadczam, że w pracy *Ciułkowicz M, Maciaszek J, Misiak B, Pałęga A, Rymaszewska J, Szcześniak DM. Coping Strategies and Psychopathological Responses Among Medical and Non-medical Professionals - a Cross-Sectional Online Survey. Front Psychiatry. 2021 May 20;12:663224. doi: 10.3389/fpsyt.2021.663224. PMID: 34093277; PMCID: PMC8173082* mój udział polegał na zgromadzeniu literatury, tworzeniu manuskryptu ooraz sprawdzeniu poprawności referencji.

Podpis

10.2 Zgody Komisji Bioetycznej

KOMISJA BIOETYCZNA
przy
Uniwersytecie Medycznym
we Wrocławiu
ul. Pasteura 1; 50-367 WROCŁAW

OPINIA KOMISJI BIOETYCZNEJ Nr KB – 188/2020

Komisja Bioetyczna przy Uniwersytecie Medycznym we Wrocławiu, powołana zarządzeniem Rektora Uniwersytetu Medycznego we Wrocławiu nr 133/XV R/2017 z dnia 21 grudnia 2017 r. oraz działająca w trybie przewidzianym rozporządzeniem Ministra Zdrowia i Opieki Społecznej z dnia 11 maja 1999 r. (Dz.U. nr 47, poz. 480) na podstawie ustawy o zawodzie lekarza z dnia 5 grudnia 1996 r. (Dz.U. nr 28 z 1997 r. poz. 152 z późniejszymi zmianami) w składzie:

prof. dr hab. Jacek Daroszewski (choroby wewnętrzne, endokrynologia, diabetologia)
prof. dr hab. Krzysztof Grabowski (chirurgia)
dr Henryk Kaczkowski (chirurgia szczękowa, chirurgia stomatologiczna)
mgr Irena Knabel-Krzyszowska (farmacja)
prof. dr hab. Jerzy Liebhart (choroby wewnętrzne, alergologia)
ks. dr hab. Piotr Mrzygłód, prof. nadzw. (duchowny)
mgr Luiza Műller (prawo)
dr hab. Sławomir Sidorowicz (psychiatria)
prof. dr hab. Leszek Szenborn, (pediatria, choroby zakaźne)
Danuta Tarkowska (pielęgniarstwo)
prof. dr hab. Anna Wiela-Hojeńska (farmakologia kliniczna)
dr hab. Andrzej Wojnar, prof. nadzw. (histopatologia, dermatologia) przedstawiciel Dolnośląskiej Izby Lekarskiej)
dr hab. Jacek Zieliński (filozofia)

pod przewodnictwem
prof. dr hab. Jana Kornafela (ginekologia i położnictwo, onkologia)

Przestrzegając w działalności zasad Good Clinical Practice oraz zasad Deklaracji Helsińskiej, po zapoznaniu się z projektem badawczym pt.

„Ocena obciążenia psychicznego pracowników ochrony zdrowia w Polsce w okresie pandemii koronawirusa SArs-cOv-2 – badanie obserwacyjne prospektywne przy pomocy ankiet internetowych"

zgłoszonym przez **prof. dr hab. n. med. Joannę Rymaszewską** zatrudnioną w Katedrze i Klinice Psychiatrii Uniwersytetu Medycznego we Wrocławiu oraz złożonymi wraz z wnioskiem dokumentami, w tajnym głosowaniu postanowiła **wyrazić zgodę** na przeprowadzenie badania w Katedrze Psychiatrii **pod warunkiem zachowania anonimowości uzyskanych danych**.

Uwaga: Badanie to zostało objęte ubezpieczeniem odpowiedzialności cywilnej Uniwersytetu Medycznego we Wrocławiu z tytułu prowadzonej działalności.

Pouczenie: W ciągu 14 dni od otrzymania decyzji wnioskodawcy przysługuje prawo odwołania do Komisji Odwoławczej za pośrednictwem Komisji Bioetycznej UM we Wrocławiu

Opinia powyższa dotyczy projektu badawczego realizowanego poza działalnością statutową

Opinia jest ważna do dnia 1 kwietnia 2021 r. (1 rok)

Wrocław, dnia 17 marca 2020 r.

Uniwersytet Medyczny we Wrocławiu
KOMISJA BIOETYCZNA
przewodniczący
prof. dr hab. Jan Kornafel

KOMISJA BIOETYCZNA
przy
Uniwersytecie Medycznym
we Wrocławiu
ul. Pasteura 1; 50-367 WROCŁAW

OPINIA KOMISJI BIOETYCZNEJ Nr KB – 286/2020

Komisja Bioetyczna przy Uniwersytecie Medycznym we Wrocławiu, powołana zarządzeniem Rektora Uniwersytetu Medycznego we Wrocławiu nr 133/XV R/2017 z dnia 21 grudnia 2017 r. oraz działająca w trybie przewidzianym rozporządzeniem Ministra Zdrowia i Opieki Społecznej z dnia 11 maja 1999 r. (Dz.U. nr 47, poz. 480) na podstawie ustawy o zawodzie lekarza z dnia 5 grudnia 1996 r. (Dz.U. nr 28 z 1997 r. poz. 152 z późniejszymi zmianami) w składzie:

prof. dr hab. Jacek Daroszewski (choroby wewnętrzne, endokrynologia, diabetologia)
prof. dr hab. Krzysztof Grabowski (chirurgia)
dr Henryk Kaczkowski (chirurgia szczękowa, chirurgia stomatologiczna)
mgr Irena Knabel-Krzyszowska (farmacja)
prof. dr hab. Jerzy Liebhart (choroby wewnętrzne, alergologia)
ks. dr hab. Piotr Mrzygłód, prof. nadzw. (duchowny)
mgr Luiza Műller (prawo)
dr hab. Sławomir Sidorowicz (psychiatria)
prof. dr hab. Leszek Szenborn, (pediatria, choroby zakaźne)
Danuta Tarkowska (pielęgniarstwo)
prof. dr hab. Anna Wiela-Hojeńska (farmakologia kliniczna)
dr hab. Andrzej Wojnar, prof. nadzw. (histopatologia, dermatologia) przedstawiciel Dolnośląskiej Izby Lekarskiej)
dr hab. Jacek Zieliński (filozofia)

pod przewodnictwem
prof. dr hab. Jana Kornafela (ginekologia i położnictwo, onkologia)

Przestrzegając w działalności zasad Good Clinical Practice oraz zasad Deklaracji Helsińskiej, po zapoznaniu się z projektem badawczym pt.

„Czynniki intra- oraz interpersonalne a nasilenie objawów lęku o stan zdrowia oraz cyberchondrii w czasie pandemii Sars-CoV-2"

zgłoszonym przez **prof. dr hab. n. med. Joannę Rymaszewską** zatrudnioną w Katedrze i Klinice Psychiatrii Uniwersytetu Medycznego im. Piastów Śląskich we Wrocławiu oraz złożonymi wraz z wnioskiem dokumentami, w tajnym głosowaniu postanowiła **wyrazić zgodę** na przeprowadzenie badania w Katedrze Psychiatrii Uniwersytetu Medycznego im. Piastów Śląskich we Wrocławiu **pod warunkiem zachowania anonimowości uzyskanych danych**.

Uwaga: Badanie to zostało objęte ubezpieczeniem odpowiedzialności cywilnej Uniwersytetu Medycznego we Wrocławiu z tytułu prowadzonej działalności.

Pouczenie: W ciągu 14 dni od otrzymania decyzji wnioskodawcy przysługuje prawo odwołania do Komisji Odwoławczej za pośrednictwem Komisji Bioetycznej UM we Wrocławiu.

Opinia powyższa dotyczy projektu badawczego realizowanego poza działalnością statutową.

Opinia jest ważna do dnia 1 czerwca 2022 r. (2 lata)

Wrocław, dnia 13 maja 2020 r.

Uniwersytet Medyczny we Wrocławiu
KOMISJA BIOETYCZNA
przewodniczący
prof. dr hab. Jan Kornafel

10.3 Nota biograficzna i dorobek naukowy

Wykształcenie i przebieg pracy zawodowej: Marta Ciułkowicz (05.08.1991 r.) ukończyła studia na Wydziale Lekarskim Śląskiego Uniwersytetu Medycznego w Katowicach uzyskując w 2017 r. tytuł lekarza. Od 2018 r. uczestniczy w studiach doktoranckich w Katedrze Psychiatrii Uniwersytetu Medycznego we Wrocławiu. Po zakończeniu stażu podyplomowego rozpoczęła szkolenie specjalizacyjne w dziedzinie psychiatrii w Dolnośląskim Centrum Zdrowia Psychicznego (02.2019r.), które obecnie kontynuuje w Klinice Psychiatrii Uniwersytetu Medycznego we Wrocławiu (od 12.2019r.).

Dorobek naukowy: 12 publikacji z IF; Total IF: 59,604; liczba cytowani łącznie: 238, Total MNiSW score: 1 420; H-index=7

Prace opublikowane z IF:

Ciułkowicz M., Misiak B., Szcześniak D., Grzebieluch J., Maciaszek J., Rymaszewska J.: Social support mediates the association between health anxiety and quality of life: findings from a cross-sectional study, International Journal of Environmental Research and Public Health, 2022, vol. 19, nr 19, art.12962 [11 s.], DOI:10.3390/ijerph191912962, 140 punktów, IF(4,614)

Ciułkowicz M., Misiak B., Szcześniak D., Grzebieluch J., Maciaszek J., Rymaszewska J.: The portrait of cyberchondria - a cross-sectional online study on factors related to health anxiety and cyberchondria in Polish population during SARS-CoV-2 pandemic, International Journal of Environmental Research and Public Health, 2022, vol. 19, nr 7, art.4347 [10 s.], DOI:10.3390/ijerph19074347, 140 punktów, IF(4,614)

Ciułkowicz M., Maciaszek J., Misiak B., Pałęga A., Rymaszewska J., Szcześniak D.: Coping strategies and psychopathological responses among medical and non-medical professionals - a cross-sectional online survey, Frontiers in Psychiatry, 2021, vol. 12, art.663224 [14 s.], DOI:10.3389/fpsyt.2021.663224, 100 punktów, IF(5,435)

Fila-Witecka K., Senczyszyn A., Kołodziejczyk A., Ciułkowicz M., Maciaszek J., Misiak B., Szcześniak D., Rymaszewska J.: Lifestyle changes among Polish university students during the COVID-19 pandemic, International Journal

of Environmental Research and Public Health, 2021, vol. 18, nr 18, art.9571 [18 s.], DOI:10.3390/ijerph18189571, 140 punktów, IF(4,614)

Kołodziejczyk A., Misiak B., Szcześniak D., Maciaszek J., Ciułkowicz M., Łuc D., Wieczorek T., Fila-Witecka K., Chładzińska-Kiejna S., Rymaszewska J.: Coping styles, mental health, and the COVID-19 quarantine: a nationwide survey in Poland, Frontiers in Psychiatry, 2021, vol. 12, art.625355 [8 s.], DOI:10.3389/fpsyt.2021.625355, 100 punktów, IF(5,435)

Maciaszek J., Lenart M., Misiak B., Grzebieluch J., Gawłowski P., Ciułkowicz M., Łuc D., Szcześniak D., Rymaszewska J.: Unknown enemy and psychopathological responses: a cross-sectional nationwide study assessing the knowledge about COVID-19, Frontiers in Psychiatry, 2021, vol. 12, art.704558 [9 s.], DOI:10.3389/fpsyt.2021.704558, 100 punktów, IF(5,435)

Maćkowiak M., Senczyszyn A., Lion K., Trypka E., Małecka M., Ciułkowicz M., Mazurek J., Świderska R., Rymaszewska J., Szcześniak D.: The experiences of people with dementia and informal carers related to the closure of social and medical services in Poland during the COVID-19 pandemic - a qualitative study, Healthcare, 2021, vol. 9, nr 12, art.1677 [15 s.], DOI:10.3390/healthcare9121677, łączna liczba autorów: 12, 40 punktów, IF(3,16)

Wieczorek T., Kołodziejczyk A., Ciułkowicz M., Maciaszek J., Misiak B., Rymaszewska J., Szcześniak D.: Class of 2020 in Poland: students' mental health during the COVID-19 outbreak in an academic setting, International Journal of Environmental Research and Public Health, 2021, vol. 18, nr 6, art.2884 [14 s.], DOI:10.3390/ijerph18062884, 140 punktów, IF(4,614)

Jawiarczyk-Przybyłowska A., Szcześniak D., Ciułkowicz M., Bolanowski M., Rymaszewska J.: Importance of illness acceptance among other factors affecting quality of life in acromegaly, Frontiers in Endocrinology, 2020, vol. 10, art.899 [10 s.], DOI:10.3389/fendo.2019.00899, 100 punktów, IF(5,555)

Maciaszek J., Ciułkowicz M., Misiak B., Szcześniak D., Łuc D., Wieczorek T., Fila-Witecka K., Gawłowski P., Rymaszewska J.: Mental health of medical and non-medical professionals during the peak of the COVID-19 pandemic: a cross-

sectional nationwide study, Journal of Clinical Medicine, 2020, vol. 9, nr 8, art.2527 [11 s.], DOI:10.3390/jcm9082527, 140 punktów, IF(4,242)

Senczyszyn A., Lion K., Szcześniak D., Trypka E., Mazurek J., Ciułkowicz M., Maćkowiak M., Duda-Sikuła M., Wallner R., Rymaszewska J.: Mental health impact of SARS-COV-2 pandemic on long-term care facility personnel in Poland [research letter], Journal of the American Medical Directors Association, 2020, vol. 21, nr 11, s. 1576-1577, DOI:10.1016/j.jamda.2020.09.020, 140 punktów, IF(4,669)

Szcześniak D., Ciułkowicz M., Maciaszek J., Misiak B., Luc D., Wieczorek T., Fila-Witecka K., Rymaszewska J.: Psychopathological responses and face mask restrictions during the COVID-19 outbreak: results from a nationwide survey, Brain Behavior and Immunity, 2020, vol. 87, s. 161-162, [W tekście błędne nazwisko Karolina-Fila Witecka], DOI:10.1016/j.bbi.2020.05.027, 140 punktów, IF(7,217)

Udział w grantach i projektach badawczych: badaczka międzynarodowego projektu COGNISANCE (2019-2022) mającego na celu poprawę jakości wsparcia podiagnostycznego u osób żyjących z otępieniem oraz ich opiekunów. Projekt realizowany jest we współpracy z badaczami z Australii, Kanady, Wielkiej Brytanii oraz Holandii. Finansowany przez JPND/NCBIR.

Przynależność do Towarzystw Naukowych: Polskie Towarzystwo Psychiatryczne