

Correlation of Psychosis and Suicide Attempts with Meteorological Factors

Korelacija psihoza i pokušaja suicida s meteorološkim faktorima

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Abstract

In this study the authors have tried to find out if there is any correlation between weather characteristics and acute psychoses and suicidal attempts (APSA). This research was based on SHMP data about the number of interventions in cases of APSA over a period of one year (VI/1988-V/1989) in Zagreb and on the meteorological data registered at the Observatory Zagreb-Maksimir in the same period as well as on weather charts prepared daily or collected in the Hydrometeorological Institute of Croatia in Zagreb. A possible correlation with weather types and passages of cold fronts and especially with meteorological elements as: cloudiness, barometric pressure, air temperature and relative humidity, was studied. Linear correlation coefficients were calculated for daily values and for moving three-, five- and seven-day periods.

The results revealed that the number of psychoses and suicidal attempts increased from month to month during the period considered, especially in females of the 15-20, 21-30 and 31-40 age groups. The acute psychosis and suicidal attempt number does not significantly differ with respect to weather type. The daily frequency of these pathological reactions increases in all seasons typically a day or two before and after a cold front passage, but differences are not significant. A significant correlation was obtained only with the duration of a high daily cloudiness amount. Suicidal attempts and psychoses increase significantly if the cloudy period lasts at least three days, but their significance is higher if the cloudy weather period is longer.

Key words: suicidal attempts, acute psychoses, weather types, passages of cold fronts, duration and cloudiness amount

Sažetak

U radu se pokušava ustanoviti postoji li povezanost između nekih obilježja vremena i akutnih psihoza i pokušaja samoubojstva. Za istraživanje su korišteni podaci Stanica hitne medicinske pomoći (SHMP) o dnevnom broju intervencija u Zagrebu zbog spomenutih dijagnoza u periodu jedne godine (VI/1988-V/1989) i meteorološki podaci registrirani na Opservatoriju Zagreb-Maksimir, kao i sinoptički materijali

Republičkog hidrometeorološkog zavoda (RHMZ). Proučavana je ovisnost o tipovima vremena, prolazima hladnih fronti preko Zagreba i posebno korelacija s dnevnim količinom naoblake, te dnevnim vrijednostima tlaka, temperature i vlage zraka te s njihovim kliznim srednjacima za trodnevna, petodnevna i sedmodnevna razdoblja.

Rezultati su pokazali da se broj akutnih psihoza i pokušaja samoubojstava ne razlikuje prema tipovima vremena. Međutim, njihov broj raste tipično kroz sva godišnja doba dan-dva prije prolaza, kao i dan-dva iza prolaza hladne fronte, no razlike nisu među danima signifikantne. Signifikantne korelacije su dobivene samo s trajanjem i velikom količinom naoblake. Da bi došlo do porasta patoloških manifestacija i suicida, oblačno vrijeme mora potrajati barem tri dana. šanse za povećan broj pokušaja suicida i akutnih psihoza to su veće što oblačno razdoblje duže traje.

Ključne riječi: pokušaji samoubojstava, akutne psihoze, tipovi vremena, prolazi fronti, količina i trajanje naoblake

1. Introduction

Some authors attribute the number of suicide attempts, besides other factors (social, economic, higienic etc.), to weather conditions. Meteorological effects on suicides and suicide attempts are difficult to establish, says Tromp (1980) on the basis of Tholuck's (1942) and De Rudder's (1952) investigation in Germany, "because they do not correlate with such meteorological factors as temperature, atmospheric pressure, hours of sunshine or precipitation. However more sophisticated meteorological analyses have revealed certain relationship". These authors have found a highly significant correlation with both cold and warm weather fronts. Studies by Rohden (1933) in Switzerland have indicated a significant increase in the number of suicide cases and crimes when a hot, dry föhn wind prevails. Reiter (1960) in Germany has demonstrated a statistically significant correlation between periods of high suicide frequency and days of strong long wave electromagnetic radiation disturbances in the atmosphere. Extensive studies by Tromp and Bouma (1972, 1973), carried out for the Netherlands showed that there was no simple correlation between suicide or attempted suicide and any one particular meteorological factor. However, a "highly significant correlation was observed between cluster days (of suicide) and days with the approach or passage of depressions and/or weather fronts". An earlier study by

Pleško et al. (1985) also indicated that weather fronts are an important meteorological parameter in the case of committed suicides.

Of course, weather conditions cannot be the only significant factor in the increased number of suicides or suicide attempts. They can probably act only on the mental state of nervous, unstable persons and contribute to magnifying their momentary problems, so that feel there is no way to out.

Therefore the purpose of this study is:

1) to investigate the presumption that weather conditions, not only weather fronts, are factors contributing to man's more frequent attack at his own life.

2) to establish the characteristics of such weather in a recognizable form.

The atmosphere is a very dynamic medium. At every moment, at some locality, it is defined by numerous meteorological elements as: barometric pressure, air temperature and humidity, wind speed and direction, cloudiness, various meteorological phenomenon etc., which all make weather. They change permanently and can exist in numerous combinations. This fact is an aggravating circumstance in the selection of meteorological elements essential for an analysis. Therefore many authors analyse the common complex characteristics of the atmosphere and correlate them with man's reaction. These are usually:

- weather types and
- weather front passages.

These have been followed and related to the number of psychoses and suicide attempts (APSA) in Zagreb over the period of one year (VI/1988-V/1989). It was considered that acute psychoses as well as suicide attempts were caused by the same unfavourable weather conditions and therefore have been researched together in relation to weather. The next problem is the question whether man - the potential suicide - reacts to bad weather just on the day of the suicide attempt or committed suicide, or whether a longer period is necessary of unfavourable weather conditions influencing a neurovegetatively unstable person. We tried to find an answer to this question by studying comparatively:

- the mean daily values of individual meteorological elements and daily frequencies of APSA,

- the moving averages of individual meteorological elements for three-, five- and seven-day periods and the corresponding frequency of APSA.

In both cases the following individual meteorological elements were included:

- cloudiness amount,
- barometric pressure,
- air temperature and
- relative humidity.

2. Methods

1) The basic data used in searching for a correlation with meteorological parameters were the data of the Urgent Medical Help Service (SHMP) about interventions in the period June 1988-May 1989 involving:

- the daily number of suicide attempts or committed suicides and
- the daily number of acute psychoses.

2) All meteorological data used in study have been obtained from the Hydrometeorological Institute (RHMZ) and were measured at the Meteorological Observatory Zagreb-Maksimir or collected and prepared at the Institute. The weather types for Zagreb were defined according to Poje's classification (1965). This classification is

based on surface air pressure distribution. The weather was classified for each day according to the synoptic charts for 13 hour MET. The classification contains the types belonging to the following categories:

- low air pressure, and these are:

- T - Trough of low pressure

- L_C, L_1, L_2 - Center, easterly and southerly cyclone side

- L_3, L_4 - westerly and northerly cyclone side

- W_C - field of low pressure gradient, cyclonal type

- high air pressure, and these are:

- W_a - field of low pressure gradient (anticyclonal type)

- R, B - ridge and bridge of high pressure

- H_C, H_1, H_2 - center, easterly and southerly anticyclone side

- H_3, H_4 - westerly and northerly anticyclone side

- transitional, advective types (types with straight isobars):

- N; NE - northerly and northwesterly state

- E, SE - easterly and southeasterly state

- S, SW - southerly and southwesterly state

- W, NW - westerly and northwesterly state

The characteristics of these weather types have been described in a study by Pleško and Petričević-Migić (1974).

3) The influence of cold front passages (day n) over Zagreb was studied in relation to APSA frequency in days of front passage and in the period of n-3 to n+3 days.

4) A correlation with individual meteorological elements (cloudiness, barometric pressure, air temperature and relative humidity) was determined by a linear correlation coefficient for:

- the daily values of meteorological elements and APSA and

- three-, five- and seven-day moving averages of meteorological elements and corresponding values of APSA.

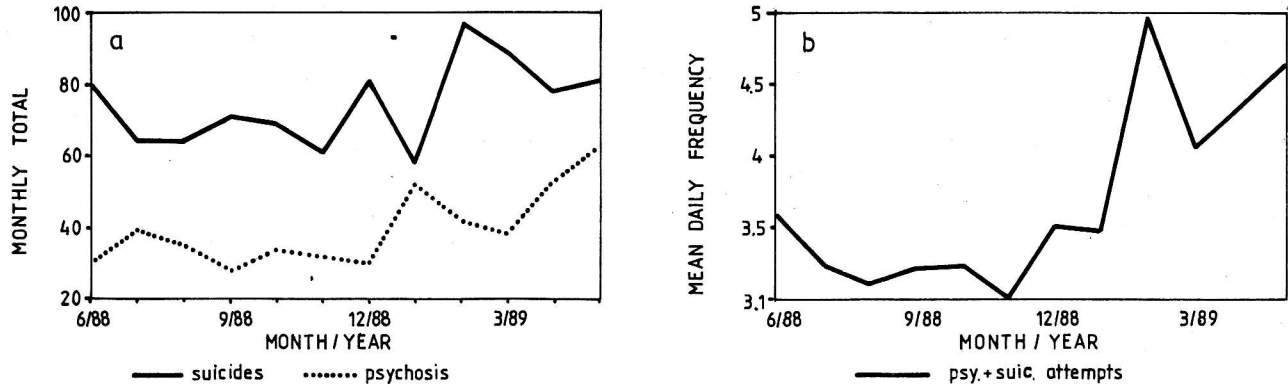


Fig. 1. Monthly number (a) and mean daily number (b) of psychoses and suicide attempts, Zagreb 6/1988-5/1989

Sl. 1. Mjesečni broj (a) i srednji dnevni broj (b) psihoza i pokušaja suicida, Zagreb 6/1988-5/1989

3. Results and discussion

3.1. An analysis of APSA data

During the year (June 1988 - May 1989) SHMP in Zagreb registered 1362 interventions due to APSA. In spite of the fact that the greater part of calls were registered in February 1989 (Fig. 1.a), it is easy to notice that the trend of APSA permanently increases (Fig. 1.b).

The distribution of APSA according to age and sex (Fig. 2) indicates that suicide attempts are more frequent in females than in males. The most frequent were in the 20-30 age group for both sexes. The state of psychosis was, though, slightly

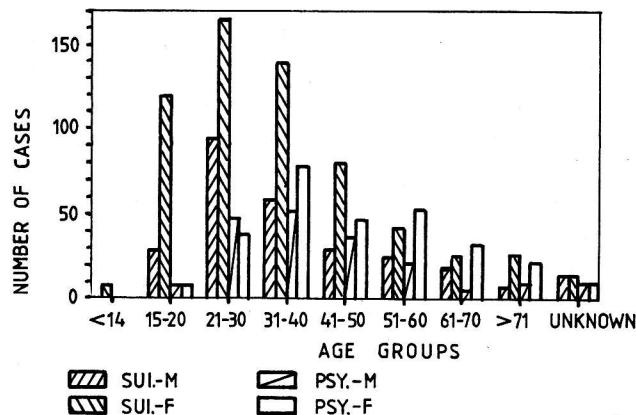


Fig. 2. Frequency distribution of psychoses and suicide attempts according to sex and age, Zagreb, 6/1988-5/1989

Sl. 2. Razdioba učestalosti psihoza i pokušaja suicida po spolu i dobi, Zagreb, 6/1988-5/1989

more frequent in the 30-40 age group, but on the other hand this group comprised a smaller number of suicide attempts than the 20-30 group. Evidently, the age of 20-40, in general, is a period in man's life when existential pressures are very high and some people cannot bear them.

3.2. A correlation between suicide attempts and weather types

This correlation of APSA was analysed through seasons because weather types have not the same weather characteristics during the year. For instance, in a summer anticyclone cloudless, warm and sunny weather prevails but in autumn and winter the mornings and evenings bring very often a long-lasting fog with cold and unpleasant weather.

The results show (Fig. 3 and Fig. 4) that summer and autumn are the seasons with the most APSA in low pressure types (Fig. 3 and Fig. 4). The figures show the number of days of each weather type in a particular season and the number of APSA. In winter the greatest number of APSA cases was registered in high pressure weather types, and in spring in both low and high pressure. It should be mentioned that differences of APSA mean number between various weather types are not specially stressed in any season.

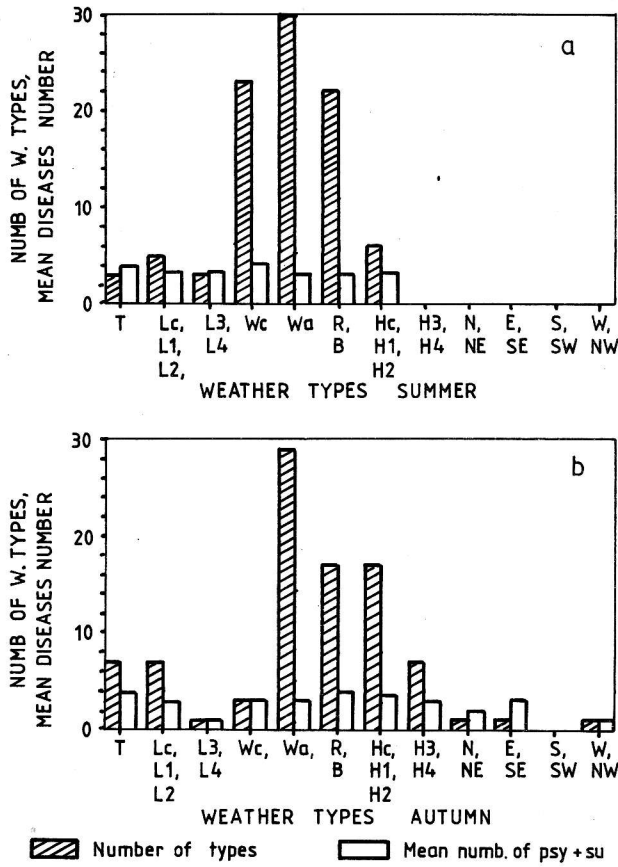


Fig. 3. Psychosis and suicide attempt distribution according to weather types in summer (a) and autumn (b), Zagreb, 6/1988-5/1989

Sl. 3. Razdioba psihoza i pokušaja suicida po tipovima vremena - ljeti (a) i u jesen (b), Zagreb, 6/1988-5/1989

3.3. A correlation of APSA with front passages

Front passages are atmospheric processes which can influence man's psychophysical state. Many authors, according to Tromp (1980), Pleško (1985) and others, have proved a correlation between the incidence of various diseases and passages of cold or warm fronts, or both. During front passage, weather conditions worsen: the amount of clouds increases, frequently accompanied by precipitation, the field of atmospheric electricity changes very intensively as well as air temperature, relative humidity, wind speed and direction etc. Sometimes such unfavourable weather conditions can continue for several days, especially in the

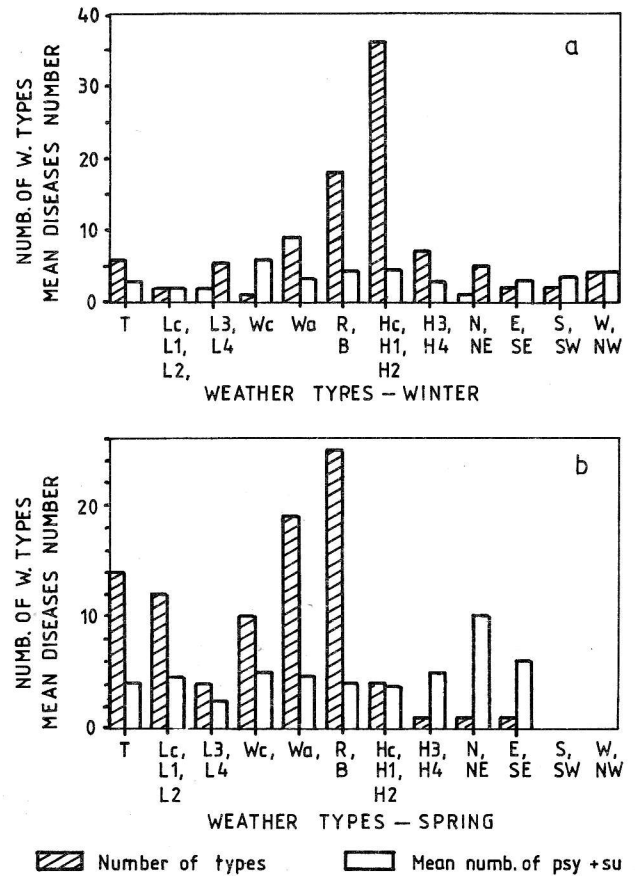


Fig. 4. Psychosis and suicide attempt distribution according to weather types in winter (a) and spring (b), Zagreb, 6/1988-5/1989

Sl. 4. Razdioba psihoza i pokušaja suicida po tipovima vremena - zimi (a) i u proljeće (b), Zagreb, 6/1988-5/1989

colder part of the year, and then the danger for mentally unstable persons increases.

An analysis of the mean daily suicide number in the period n-3 to n+3 days around the day of cold front passage (day n) revealed an increase of APSA on the day or two preceding, and even a larger increase on the day or two following a cold front passage, compared to the APSA daily mean for the season (seasonal means of APSA are shown by straight, horizontal lines). A decrease in the APSA mean number was registered on the very day of front passage. The difference in the daily APSA mean numbers are not large, but they are very characteristic by their similarity in all seasons, which confirms our earlier results (Pleško et al, 1985) and the results quoted by Tromp (1980), Reiter (1960) and others.

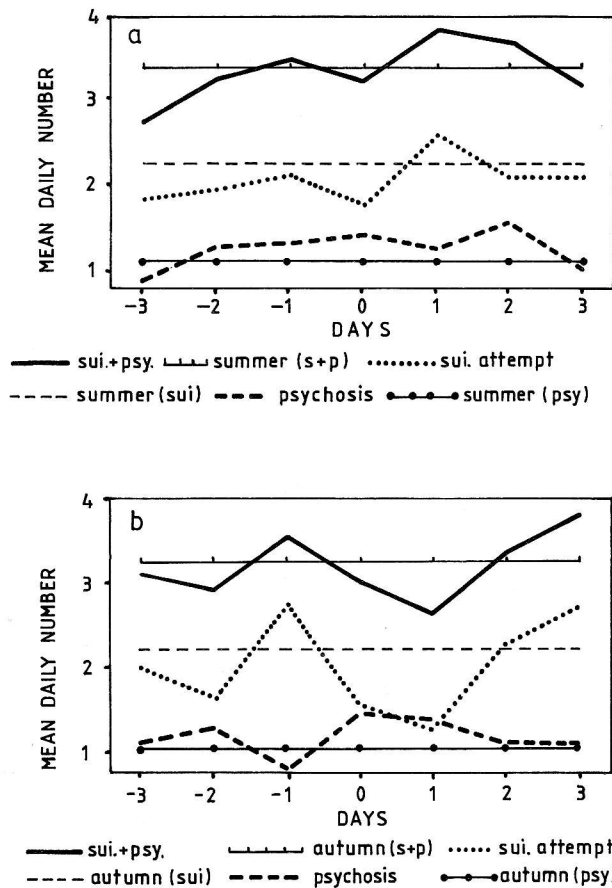


Fig. 5. Mean daily number of psychoses, suicide attempts and their total in the period of $n-3$ to $n+3$ days around a day with cold front passage (day n) - in summer (a) and autumn (b), Zagreb, 6/1988-5/89

Sl. 5. Srednji dnevni broj psihoza i pokušaja suicida te njihove sume u periodu $n-3$ do $n+3$ dana oko dana s prolazom hladne fronte (dan n) - ljeti (a) i u jesen (b), Zagreb, 6/1988-5/1989

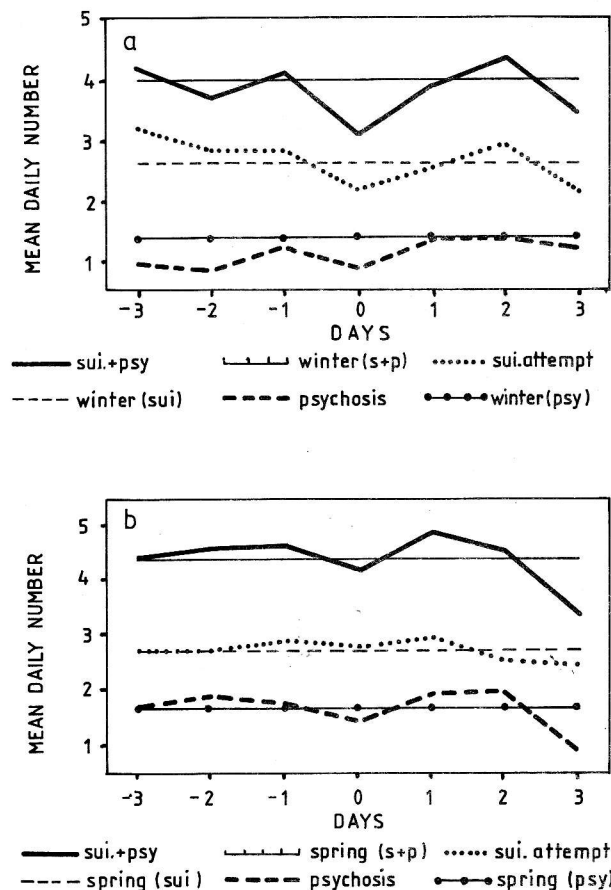


Fig. 6. Mean daily number of psychoses, suicide attempts and their total in the period of $n-3$ to $n+3$ days around a day with cold front passage (day n) - in winter (a) and spring (b), Zagreb, 6/1988-5/89

Sl. 6. Srednji dnevni broj psihoza i pokušaja suicida te njihove sume u periodu $n-3$ do $n+3$ dana oko dana s prolazom hladne fronte (dan n) - zimi (a) i u proljeće (b), Zagreb, 6/1988-5/1989

3.4. A correlation with individual meteorological elements

3.4.1. Daily, three-, five- and seven-day values

A calculation of linear correlation coefficients for daily values of APSA and the corresponding mean daily values of cloudiness amount, barometric pressure, air temperature and relative humidity did not show significant correlation (Tab. 1). The authors quoted in the introduction obtained the same results. We believe the reason is probably in the fact that man can endure

unfavorable weather conditions if they last only one day. A longer time period of unfavorable weather conditions, for instance of large cloudiness amount, can produce a sombre atmosphere which, we suppose, leads to a depressive mood. Therefore, the correlation calculations were repeated for the time series of moving mean three-, five- and seven-day values (the moving step was one day) (Tab. 2 - Tab. 4). The results show that our presumptions were correct. Already a correlation of moving cloudiness averages for three-day periods and the corresponding three-day averages of APSA are significant ($r = 0.12$, $P = 0.0268$), indicating an increase in APSA with increased cloudiness amount.

Tab. 1. Linear correlation coefficients between the daily number of psychoses, suicide attempts and their total - and meteorological elements, Zagreb, 6/1988-5/1989

Tab. 1. Koeficijenti linearne korelacije između dnevnog broja psihoza, pokušaja suicida i njihove sume s meteorološkim elementima, Zagreb, 6/1988-5/1989

	P+S	S	P	C	BP	AT	RH
P+S	1.0000 (365) .0000	.8031 (365) .0000	.6221 (365) .0000	.0104 (365) .8431	.0245 (365) .6405	-.0366 (365) .4861	-.0175 (365) .7395
S	.8031 (365) .0000	1.0000 (365) .0000	.0331 (365) .5284	.0144 (365) .7839	-.0468 (365) .3731	-.0075 (365) .8870	-.0215 (365) .6819
P	.6221 (365) .0000	.0331 (365) .5284	1.0000 (365) .0000	-.0015 (365) .9774	.1026 (365) .0502	-.0515 (365) .3261	-.0010 (365) .9848
C	.0104 (365) .8431	.0144 (365) .7839	-.0015 (365) .9774	1.0000 (365) .0000	.0635 (365) .2260	-.4103 (365) .0000	.5452 (365) .0000
BP	.0245 (365) .6405	-.0468 (365) .3731	.1026 (365) .0502	.0635 (365) .2260	1.0000 (365) .0000	-.4898 (365) .0000	.2894 (365) .0000
T	-.0366 (365) .4861	-.0075 (365) .8870	-.0515 (365) .3261	-.4103 (365) .0000	-.4898 (365) .0000	1.0000 (365) .0000	-.6235 (365) .0000
RH	-.0175 (365) .7395	-.0215 (365) .6819	-.0010 (365) .9848	.5452 (365) .0000	.2894 (365) .0000	-.6235 (365) .0000	1.0000 (365) .0000

P+S - psychosis +suicides
 S - suicides
 P - psychosis
 C - cloudiness
 BP - b. pressure
 AT - a. temperature
 RH - r. humidity

Correlation coefficient (Sample size) Significance level

The correlation coefficient significance increases with the cloudy period length and for a five-day moving period it is $r = 0.19$ with $P = 0.0002$, and for a seven-day period it is even more significant ($r = 0.236$, $P < 0.0001$). In other words, it seems that the longer the cloudy period the higher the APSA number. A presence of large cloudiness amount lasting over some days, which is

Tab. 2. Linear correlation coefficients between three-daily moving averages of psychoses, suicide attempts and their total - and meteorological elements, Zagreb, 6/1988-5/89

Tab. 2. Koeficijenti linearne korelacije između trodnevni kliznih srednjaka psihoza, pokušaja suicida i njihove sume - i meteoroloških elemenata, Zagreb, 6/1988-5/1989

	P+S 3	S 3	P 3	C 3	BP 3	AT 3	RH 3
P+S 3	1.0000 (365) .0000	.7871 (365) .0000	.6514 (365) .0000	.1159 (365) .0268	.0172 (365) .7438	-.0384 (365) .4650	-.0537 (365) .3059
S 3	.7871 (365) .0000	1.0000 (365) .0000	.0447 (365) .3950	.0688 (365) .1896	-.0855 (365) .1028	-.0042 (365) .9361	-.0549 (365) .2954
P 3	.6514 (365) .0000	.0447 (365) .3950	1.0000 (365) .0000	.1031 (365) .0491	.1330 (365) .0110	-.0569 (365) .2779	-.0195 (365) .7107
C 3	.1159 (365) .0268	.0688 (365) .1896	.1031 (365) .0491	1.0000 (365) .0000	.1301 (365) .0129	-.5104 (365) .0000	.6384 (365) .0000
BP 3	.0172 (365) .7438	-.0855 (365) .1028	.1330 (365) .0110	.1301 (365) .0129	1.0000 (365) .0000	-.5116 (365) .0000	.3610 (365) .0000
AT 3	-.0384 (365) .4650	-.0042 (365) .9361	-.0569 (365) .2779	-.5104 (365) .0000	-.5116 (365) .0000	1.0000 (365) .0000	-.6640 (365) .0000
RH 3	-.0537 (365) .3059	-.0549 (365) .2954	-.0195 (365) .7107	.6384 (365) .0000	.3610 (365) .0000	-.6640 (365) .0000	1.0000 (365) .0000

Correlation coefficient (Sample size) Significance level

characteristic of weather situations with mostly low barometric pressure, can act depressively on nervous, unstable persons and can cause their problems look hopeless. Other meteorological elements have not been significant for APSA frequency.

4. Conclusion

Although a period of only one year has been studied, the results indicate beyond any doubt that:

Tab. 3. Linear correlation coefficients between five-daily moving averages of psychoses, suicide attempts and their total - and meteorological elements, Zagreb, 6/1988-5/89

Tab. 3. Koeficijenti linearne korelacije između petodnevnikih kliznih srednjaka psihoza, pokušaja suicida i njihove sume - i meteoroloških elemenata, Zagreb, 6/1988-5/1989

	P+S 5	S 5	P 5	C 5	BP 5	AT 5	RH 5
P+S 5	1.0000 (365)	.7635 (365)	.6291 (365)	.1918 (365)	.0286 (365)	-.0477 (365)	-.0843 (365)
	.0000	.0000	.0000	.0002	.5863	.3635	.1079
S 5	.7635 (365)	1.0000 (365)	-.0216 (365)	.1072 (365)	-.0966 (365)	-.0051 (365)	-.0717 (365)
	.0000	.0000	.6805	.0406	.0653	.9231	.1715
P 5	.6291 (365)	-.0216 (365)	1.0000 (365)	.1678 (365)	.1605 (365)	-.0677 (365)	-.0442 (365)
	.0000	.6805	.0000	.0013	.0021	.1966	.4002
C 5	.1918 (365)	.1072 (365)	.1678 (365)	1.0000 (365)	.1890 (365)	-.5697 (365)	.6729 (365)
	.0002	.0406	.0013	.0000	.0003	.0000	.0000
BP 5	.0286 (365)	-.0966 (365)	.1605 (365)	.1890 (365)	1.0000 (365)	-.5373 (365)	.4201 (365)
	.5863	.0653	.0021	.0003	.0000	.0000	.0000
AT 5	-.0477 (365)	-.0051 (365)	-.0677 (365)	-.5697 (365)	-.5373 (365)	1.0000 (365)	-.6933 (365)
	.3635	.9231	.1966	.0000	.0000	.0000	.0000
RH 5	-.0843 (365)	-.0717 (365)	-.0442 (365)	.6729 (365)	.4201 (365)	-.6933 (365)	1.0000 (365)
	.1079	.1715	.4002	.0000	.0000	.0000	.0000

P+S - psychosis +suicides

S - suicides

P - psychosis

C - cloudiness

BP - b. pressure

AT - a. temperature

RH - r. humidity

Correlation coefficient (Sample size) Significance level

1. APSA depend, besides other causes, on meteorological conditions, primarily on the duration of cloudy periods.

2. Periods with a sequence of cloudy days following one another (at least three days, or longer) are significantly correlated to the suicide attempt frequency in the same period. Longer cloudy periods have higher significance.

Tab. 4. Linear correlation coefficients between seven-daily moving averages of psychoses, suicide attempts and their total - and meteorological elements, Zagreb, 6/1988-5/89

Tab. 4. Koeficijenti linearne korelacije između sedmodnevnikih kliznih srednjaka psihoza, pokušaja suicida i njihove sume - i meteoroloških elemenata, Zagreb, 6/1988-5/1989

	P+S 7	S 7	P 7	C 7	BP 7	AT 7	RH 7
P+S 7	1.0000 (365)	.7536 (365)	.6362 (365)	.2355 (365)	.0523 (365)	-.0637 (365)	-.0989 (365)
	.0000	.0000	.0000	.0000	.3188	.2245	.0592
S 7	.7536 (365)	1.0000 (365)	-.0278 (365)	.1285 (365)	-.0920 (365)	-.0123 (365)	-.0837 (365)
	.0000	.0000	.5968	.0141	.0791	.8150	.1104
P 7	.6362 (365)	-.0278 (365)	1.0000 (365)	.2074 (365)	.1876 (365)	-.0825 (365)	-.0521 (365)
	.0000	.5968	.0000	.0001	.0003	.1157	.3208
C 7	.2355 (365)	.1285 (365)	.2074 (365)	1.0000 (365)	.2362 (365)	-.6069 (365)	.6843 (365)
	.0000	.0141	.0001	.0000	.0000	.0000	.0000
BP 7	.0523 (365)	-.0920 (365)	.1876 (365)	.2362 (365)	1.0000 (365)	-.563 (365)	.4750 (365)
	.3188	.0791	.0003	.0000	.0000	.0000	.0000
AT 7	-.0637 (365)	-.0123 (365)	-.0825 (365)	-.6069 (365)	-.5631 (365)	1.0000 (365)	-.7173 (365)
	.2245	.8150	.1157	.0000	.0000	.0000	.0000
RH 7	-.0989 (365)	-.0837 (365)	-.0521 (365)	.6843 (365)	.4750 (365)	-.7173 (365)	1.0000 (365)
	.0592	.1104	.3208	.0000	.0000	.0000	.0000

Correlation coefficient (Sample size) Significance level

3. Individual days with a large cloudiness amount are not significantly correlated to APSA.

4. The frequency of APSA is not significantly correlated to the other meteorological elements studied (atmospheric pressure, air temperature, relative humidity).

5. Around a day of cold front passage (in a period n-3 to n+3 days) the number of APSA also increases although, according to the seasonal mean, it does not increase on passage day. The difference in the daily number of APSA in the period of

$n-3$ to $n+3$, is not significant.

6. Weather types, determined for each day and correlated to the daily frequencies of APSA did not show any significant differences in APSA number.

It should be mentioned that our results reveal that only periods of several days with unfavourable weather conditions, and not individual days, can influence man's mood.

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Kratak sadržaj

Služba hitne medicinske pomoći (SHMP) u Zagrebu intervenira godišnje u više od 1300 slučajeva zbog pokušaja suicida i raznih psihijatrijskih dijagnoza. Postoje dani i vremenski intervali kada je broj poziva za intervencije znatno češći nego u drugim danima. Pretpostavili smo da uz socijalne,

ekonomske, zdravstvene i druge uzroke i vremenske prilike mogu biti jedan od uzroka učestalijim psihozama od kojih neke mogu prerasti i u pokušaj suicida. Zato je cilj ovog rada bio ispitati vezu meteoroloških faktora i dnevne učestalosti psihoza i pokušaja suicida tijekom godine i to na osnovi podataka SHMP u Zagrebu za razdoblje VI/1988-V/1989 god. i istovremenih podataka Republičkog hidrometeorološkog zavoda (RHMZ) u Zagrebu, registriranih na Meteorološko-aerološkom opservatoriju Zagreb-Maksimir i raznih sinoptičkih karata i materijala koje svakodnevno prima RHMZ.

Proučavana je veza: s tipovima vremena prema klasifikaciji Poje i prolazima hladnih fronti preko Zagreba te s vremenom u periodu od tri dana prije i tri dana iza prolaza. Posebno je ispitivana korelacija sa srednjim dnevnim, trodnevnim, petodnevnim i sedmodnevnim vrijednostima pojedinačnih meteoroloških elemenata i to: naoblakom, tlakom, temperaturom i relativnom vlagom zraka.

Analiza podataka SHMP pokazala je da u promatranom periodu (VI/1988-V/1989) postoji gotovo stalan porast mjesečnog broja psihoza i pokušaja suicida (Sl. 1). Razdioba prema dobi i spolu govori da su ženske osobe sklonije pokušajima suicida nego muške, a naročito u dobnim skupinama 15-20, 21-30 i 31-40 godina (Sl. 2).

Rezultati dalje pokazuju da se prosječni dnevni broj pokušaja suicida i psihoza ne mijenja značajno u ovisnosti o tome koji tip vremena postoji nad Zagrebom (Sl. 3 i Sl. 4). Međutim, učestalost psihoza i pokušaja suicida pokazuje vrlo tipičnu sliku kroz sve sezone vezanu za prolaz hladne fronte (Sl. 5 i Sl. 6). Dan-dva uoči prolaza i dan-dva nakon prolaza učestalost pokušaja suicida i akutnih psihoza raste u svim godišnjim dobima u odnosu na sezonski prosjek, dok je u danu prolaza fronte manji od sezonskog prosjeka. Računanje koeficijenata linearne korelacije između pojedinačnih meteoroloških elemenata i učestalosti psihoza i pokušaja suicida pokazalo je da je samo naoblaka signifikantan parametar i to ne ona u jednom danu, nego velike količine naoblake koje traju barem tri dana (Tab. 1 - Tab. 4).

Signifikantnost je to veća što oblačno razdoblje duže traje. Očito duža razdoblja oblačna vremena djeluju depresivno povećavajući težinu problema u životu, što može dovesti do porasta akutnih psihoza pa i pokušaja suicida.

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