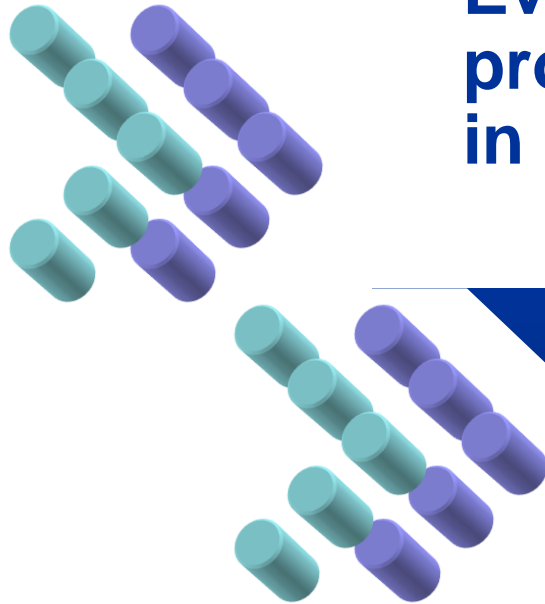


# Evaluation of risk factors influencing proper hand disinfection technique in health professionals in Poland



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# Aim, materials and methods




The aim of this study was to assess the influence of preparation for hand disinfection and proper hand disinfection procedure performance.



A total of **1320** health-care workers from **75** Polish hospitals were monitored through direct observation.



All health professionals were checked for proper hand hygiene risk factors (eg. wearing watches, rings/other jewelry, skin lesions on hands, the length of the white coat's sleeve, and in women – long fingernails or artificial/polished nails).



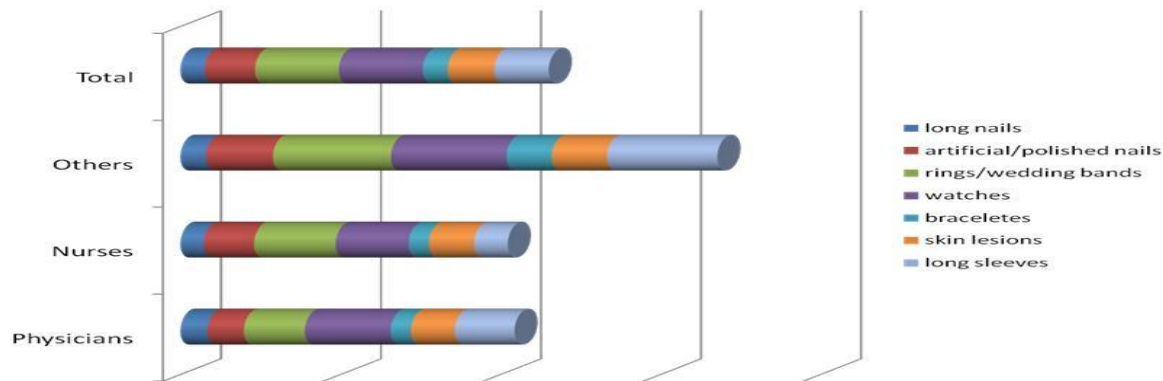
Outside investigator noted on anonymous form all observed procedures of preparation to and hand disinfection itself (checked by COUCOU BOX with UV camera, Anios®).



# Number of given risk factors for incorrect hand hygiene in different medical professionals

Personnel Risk factors	Physicians N=299	Nurses N=772	Others N=249	Total N=1320
long nails	25 (8.4%)	56 (7.3%)	20 (8.0%)	101 (7.6%)
artificial/ polished nails	34 (11.4%)	121 (15.7%)	52 (20.9%)	207 (15.7%)
rings/wedding bands	57 (19.1%)	197 (25.5%)	92 (36.9%)	346 (26.2%)
watches	80 (26.8%)	176 (22.8%)	90 (36.1%)	346 (26.2%)
bracelets	19 (6.3%)	49 (6.3%)	35 (14.1%)	103 (7.8%)
skin lesion	41 (13.7%)	109 (14.1%)	43 (17.3%)	193 (14.6%)
long-sleeves	56 (18.7%)	82 (10.6%)	86 (34.5%)	224 (17.0%)

Significantly more common risk factors were wearing watches and ring/wedding bands, than having long-sleeved white coat, artificial/polished nails, skin lesions on hands, wearing bracelets or having long nails ( $p < 0,0001$ ).



# Incorrect hand disinfection in different medical professionals according to the number of risk factors influencing hand hygiene

Personnel No of risk factors	Physicians N=299	Nurses N=772	Others N=249	Total N=1320
0	136 / 41 (30.1%)*	349 / 42 (12.0%)	79 / 9 (11.4%)	564 / 92 (16.3%)
1	85 / 35 (41.2%)	205 / 45 (22.0%)	64 / 10 (15.6%)	354 / 90 (25.4%)
2	37 / 23 (62.2%)	123 / 45 (36.6%)	38 / 17 (44.7%)	198 / 85 (42.9%)
3	21 / 16 (76.2%)	56 / 32 (57.1%)	25 / 16 (64.0%)	102 / 64 (62.7%)
4	10 / 7 (70.0%)	27 / 20 (74.1%)	21 / 18 (85.7%)	58 / 45 (77.5%)
5	5 / 4	8 / 7	14 / 13 (92.9%)	27 / 24 (88.9%)
6	5 / 5	4 / 4	8 / 7	17 / 16 (94.1%)
<b>Total</b>	<b>299 / 131 (43.8%)</b>	<b>772 / 195 (25.3%)</b>	<b>249 / 90 (36.1%)</b>	<b>1320 / 416 (31.5%)</b>

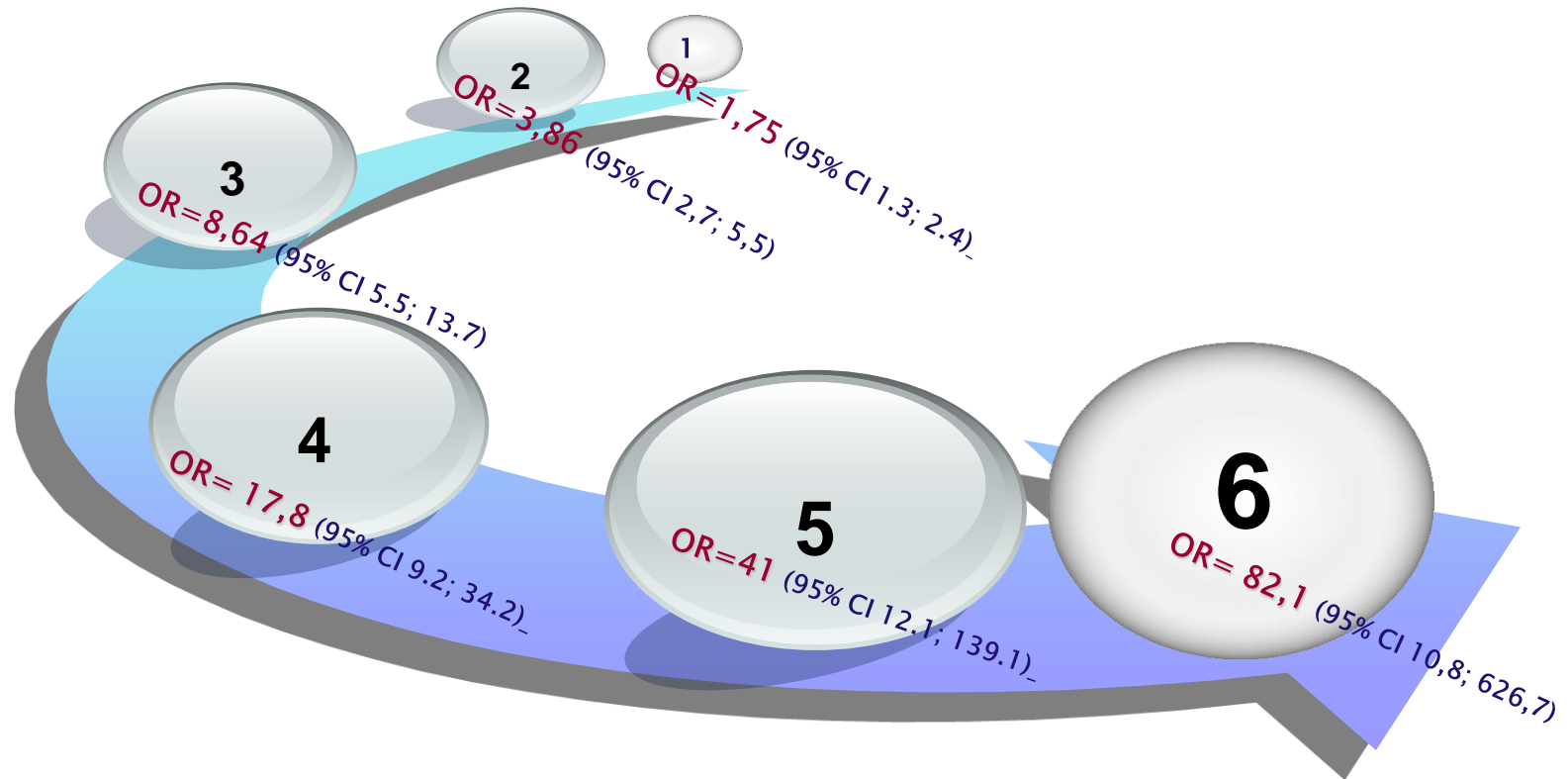
\* Number of participants/ number of participants with incorrect hand disinfection

Incorrect hand disinfection was significantly more common among doctors with no or only one risk factor in comparison to nurses and other medical personnel with the same number of risk factors ( $p < 0,0001$ ). No significant difference was noted between different health professionals with 3–5 risk factors ( $p > 0.05$ ).

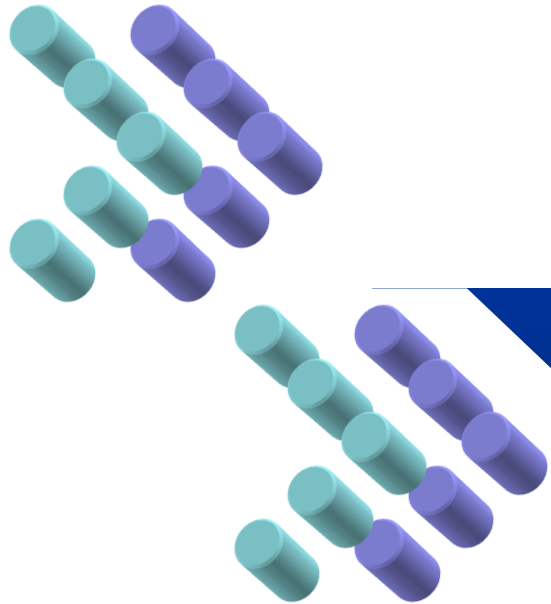
## Detailed analysis of combination of two risk factors revealed that:

- the most common combination of risk factors was wearing watch and ring/wedding band (49/198; 24.7%)
- highest percentage of incorrect hand disinfection in people with polished nails and wearing rings/wedding bands (incorrect 58.8%, correct 41.2%,  $p=0.3035$ )

# The probability of incorrect hand disinfection was higher with increasing number of risk factors for hand hygiene\_



**Only 564/1320 (42,7%) of health professionals had no risk factors for hand hygiene; of which 136 (24.1%) were physicians, 349 (61.9%) nurses and 79 (14.0%) other personnel.\_**



**Medical personnel had low awareness of risk factors influencing proper hand disinfection technique.**

**C o n c l u s i o n**