Established in 1871
Swiss Medical Weekly
Formerly: Schweizerische Medizinische Wochenschrift
The European Journal of Medical Sciences

Original article | Published 4 December 2014, doi:10.4414/smw.2014.14072
Cite this as: Swiss Med Wkly. 2014;144:w14072

White coat in primary care: what do patients think today?

Cross-sectional study

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Summary

QUESTIONS UNDER STUDY: Patient preference for their doctor's attire can influence their assessment of the quality of care. Most patients prefer specialists and hospital-based physicians to wear white coats, but evidence from general practitioner (GP) practices is lacking. We aimed to assess patient preference for GPs to wear white coats in Switzerland.

METHODS: We conducted a cross-sectional survey in the canton of Geneva, Switzerland, in 2011. The survey was part of a larger study on patient expectations from their GP. A random sample of 75 GPs was contacted by post and 23 agreed to participate. They were asked to recruit between 50 and 100 consecutive patients coming to the practice for a scheduled consultation. Patients were asked to complete a questionnaire on their expectations from the GP, including whether they preferred their GP to wear a white coat or not.

RESULTS: 1,637 patients agreed to participate (participation rate: 97%, women: 63%, mean age: 64 years). Overall, wearing a white coat was considered important by only 34% of participants. In multivariate analyses, older patients, those of Italian background and patients consulting uncertified GPs and/or GPs wearing a white coat were more likely to consider white coats as being important.

CONCLUSIONS: These findings suggest that white coats are no longer considered a powerful symbol for a large majority of patients visiting GPs. However, GPs may wish to adjust their attire to meet the expectations of their more conservative patients.

Key words: *patient perspective; doctor attire; white coat; primary care*

Introduction

Though patients generally agree that some specialists and/or hospital-based physicians, such as oncologists, ophthalmologists, surgeons, anaesthesiologists and emergency doctors, should wear a white coat during the consultation [1–5], its place in primary care medicine is a heavily debated topic. Indeed, conflicting evidence exists about how patients would like their primary care physicians (GPs) to dress [6, 7]. However, this issue may be considered as important, because doctors' appearance can affect perceptions of the quality of medical care received and influence trust, confidence and the patient-doctor relationship, which could lead to better adherence and, as a result, better health outcomes [2, 7–11]. Some patients probably perceive doctors wearing a white coat as not only more competent, professional, scientific and trustworthy, but also more hygienic and knowledgeable, mainly in hospital settings [2, 12]. On the other hand, some patients may feel more comfortable with doctors not dressed in a white coat, since formal attire may interfere with an effective patient-doctor communication and relationship [2]. In addition, the discussion is complicated by the fact that recent studies tend to show that white coats can be contaminated with different pathogens and are known to be potential transmitting agents of multi-drug resistant organisms [13–15], even though some patients believe that doctors wearing white coats are more "hygienic" [2].

In this paper, we used the data from a project assessing the satisfaction and expectations of patients consulting GPs to evaluate the preferences of these patients regarding white coats and to explore the relationship of a certain number of GP and patient characteristics on patients' responses. To our knowledge, very few studies have addressed these questions in this setting, particularly in Europe, and none in recent times.

Methods

Recruitment of the GPs and the patients

We conducted a cross-sectional survey in the canton of Geneva, Switzerland, in 2011. A random sample of 75

GPs was selected from a sampling frame consisting of all the GPs practising in the canton identified through the membership database of the professional organisation of Geneva-based physicians. They were invited to participate by post, in order to include 25 GPs in the study (expected participation rate: 33%). In the absence of any response, the GPs were personally contacted by phone two or three weeks later.

Data collection

A research assistant contacted each participating GP's medical assistant to inform them about the practical procedures for the study data collection. They were asked to recruit between fifty and one hundred consecutive patients coming to the practice for a scheduled consultation. Following informed consent, the patients completed an anonymous questionnaire containing socio-demographic questions (age, sex, nationality, marital status, education, work status, health status) and, as part of the project assessing patient satisfaction with and expectations from their GPs, they were asked to judge the importance given to the wearing of a white coat ("do you judge it to be important that your GP wears a white coat during the consultation?"). The available answers were graded from 1 ("not at all") to 5 ("extremely"). The questionnaire was pretested in a GP practice (PS) to highlight any comprehension problems by the patients and amend questions accordingly.

Inclusion criteria were capacity for providing formal consent, age older than 15 years, ability to understand and write French and having a planned appointment with the GP. All new patients and those suffering from disorders affecting their ability to consent were excluded. To ensure confidentiality, the questionnaire, which was completed in the waiting room of the practice before or after the consultation, was anonymous and deposited at the desk in a closed box.

All participating GPs also completed a questionnaire on their own sociodemographic characteristics (age, sex, certification, urbanity, number of GPs and employees in the medical office, number of days worked per week, number of working years since certification) and whether they usually wear a white coat.

All participants (patients and GPs) gave written informed consent. The study was approved by the local ethical research committee.

Sample size justification and statistical analysis

The sample size was estimated in order to measure the prevalence (50%) of the "patient expectations" items (categorical data) with a margin of error inferior to 5%. A sample size of 400 patients would have been sufficient, but we had to take the cluster effect into account, related to the fact that the patients were recruited in different practices (adjustment for taking into account the artificial decrease of the variance of measures collected in the same practice). Using an intra-class correlation of 0.025 (estimate based on published data and our personal experience) [16], and the assumption that 100 patients could be recruited in each practice, the inflation factor was 3.48 and our estimated total sample size was 1,392 patients (400 × 3.48). Regarding the proportion of patients who considered wearing a white coat as being important, a post hoc power analysis showed that a sample size of 1,379 produces a 95% confidence interval equal to the sample proportion plus or minus 0.025 when the estimated proportion is 0.34.

In order to limit the GPs' workload for our study, we asked them to enrol between 50 and 100 patients during the study period. Thus, the number of GPs needed was estimated to be between 14 and 28, leading to an average number of GPs of 21, which we rounded up to 25 to take into account possible withdrawals from the study.

For descriptive purposes, we computed frequency tables of GP and patient characteristics. For the dependent binary variable, we used the percentage of patients who considered it important that their GPs wear a white coat during the consultation (i.e. 4 or 5/5 on the Lickert scale). Crude odds ratios were computed using univariate logistic regression. All the factors, whether associated or not with the outcome, were included in a logistic regression model to identify multivariate predictors while adjusting the variance for the cluster effect (visiting the same practice) using the Stata "vce(cluster)" command, which uses a robust variance estimator computed according to the sandwich estimator of variance. For exposures with more than two levels, all odds ratios were calculated relative to the category with the most individuals in order to produce a more stable model, except for age group where they were calculated relative to the lowest category (<25 years old) in order to show the trend through the levels.

Two-sided p-value <0.05 were considered as statistically significant and all analyses were carried out with STATA version 13.1 (Stata Corp., College Station, Texas, USA, 2013).

Results

Among the 75 GPs who were contacted at random, 31% (n = 23) agreed to participate in the study. Their mean age was 50 years (35–65 years). They were predominantly male (61%), certified (87%), practising in an urban setting (52%), in solo (39%) or duo (35%) practices. On average, they worked 38.6 hours per week (SD 11.1, 20–60), 4.7 days per week (SD 0.6, 3.5–55), and were relatively experienced GPs (average number of working years since certification: 10.5 (SD 10.1, 1.5–31), average number of working years in the practice: 8.6 (SD 8.6, 1.5–31). It is worth noting that the sample of 23 GPs who agreed to participate seems to be representative of the study population (n = 650), as mean age (50 vs. 53 years) and sex (men: 61% in the two groups) are similar.

1,637 patients agreed to participate, corresponding to 71 patients per GP on average, well above the expected sample size (n = 1,392). Only 45 patients declined participation (women: 60%, mean age: 64 years), the resulting participation rate being above 97%.

Table 1 presents patient socio-demographic characteristics. They were predominantly women (63%), aged 54 on average (SD 18 years, 15–100 years). Half the patients were married, and three quarters were Swiss. Almost one third had completed a university training or equivalent, and more than half had completed an undergraduate degree. The majority had a professional activity (41%) or were retired

(30%). Only 8% were recipient of unemployment or invalidity insurance. On average, they were in good health; only 18% rated their general health status as moderate or poor.

Table 2 shows patients' views on whether GPs should wear white coats according to whether they actually wear them or not. Overall, wearing a white coat was considered important (4 or 5/5 on the Lickert scale) for only 34.4% of the responders, whereas nearly half of the patients (44.4%) judged this to be not at all important (1/5 on the Lickert scale). Patients consulting GPs wearing white coats were more likely to consider white coats as being important (41.6% vs 18.3%).

Table 3 shows patients' views on whether their GPs should wear white coats according to patient characteristics, and table 4 according to GP characteristics. In univariate analyses, Italians and patients in very good general health status were more likely to consider white coats as being important, whereas widowed patients, those who had completed university training or equivalent, and those visiting GPs with no staff and/or GPs wearing a white coat held the opposite opinion. In multivariate analyses, the odds of judging that GPs should wear white coats was significantly greater among older patients (OR 1.7, p-value 0.04 for 25–65 years and OR 2.2, p-value 0.01 for >65 years, compared to the baseline group <25 years), Italians (OR 2.1, p-value 0.001, compared to the Swiss patients) and patients visiting uncertified GPs (OR 5.3, p-value 0.01) and/or GPs wearing a coat (OR 5.7, p-value <0.001) were more likely to consider white coats as being important, whereas widowed patients (OR 0.53, p-value 0.001, compared to married patients) and those consulting GPs with no staff (OR 0.07, p-value <0.001, compared to practices with one employee) had the opposite opinion. We repeated the analysis of table 3 with age as a continuous variable. It showed the same effects for all variables included in the model, with the exception of age, which was not significant.

Table 1: Patient socio-demographic characteristics (n = 1,637).

Characteristics	n / N *	%
Female	981/ 1,563	62.8
Age group		
<25 years	97 / 1,566	6.2
25–65 years	974 / 1,566	62.2
>65 years	495 / 1,566	31.6
Marital status		
Single	386 / 1,579	24.5
Married	783 / 1,579	49.6
Divorced or separated	276 / 1,579	17.5
Widowed	134 / 1,579	8.5
Nationality		
Swiss	1163 / 1,569	74.1
Italian	92 / 1,569	5.9
French	89 / 1,569	5.7
Portuguese	57 / 1,569	3.6
Spanish	34 / 1,569	2.2
Other (<2%)	134 / 1,569	8.5
Completed training		
No training	63 / 1,505	4.2
Compulsory schooling	149 / 1,505	9.9
Apprenticeship	506 / 1,505	33.6
Baccalaureate or diploma from intermediate school	340 / 1,505	22.6
University, FIT, UAS	447 / 1,505	29.7
Work status		
Student	85 / 1,569	5.4
Occupational activity	648 / 1,569	41.3
Retired	467 / 1,569	29.8
Recipient of unemployment or invalidity insurance	133 / 1,569	8.4
Other (mainly house-wife/husband and without employment)	236 / 1,569	15.1
General health status		
Excellent or very good	449 / 1,571	28.6
Good	848 / 1,571	54.0
Moderate or poor	274 / 1,571	17.5
Number of consultations in the last 6 months		
1–2	676 / 1,571	43.0
3–4	491 / 1,571	31.3
≥5	404 / 1,571	25.7

n = number with factor considered; N = number of data available.
* Denominators do not summate to 1,637 because of missing values.
FIT = Federal Institute of Technology; UAS = University of Applied Sciences

Discussion

Overall, wearing a white coat was considered important for only 34.4% of 1,637 patients participating in this study, suggesting that this topic was not a priority for a great majority of patients.

Previous studies have shown that most patients prefer specialists and hospital-based physicians to wear formal attire [1–5, 17, 18]. According to a study carried out by Douse and coll. (2004) among 276 patients in a UK hospital, 56% preferred their doctors to wear a white coat [17]. Another study (1987) showed that among 200 inpatients of the general medical services in Boston and San Francisco, 65% strongly agreed or agreed that doctors should wear white coats [18].

The reasons are probably multiple, but several are frequently proposed: doctors' appearance may affect perceptions of the quality of medical care received and doctors wearing white coats may be seen as being more competent, which plays a role in promoting confidence, trust and em-

Table 2: Patient views on whether GPs should wear white coats according to whether GPs wear white coats or not (n = 1,525).

Lickert scale score assessing patient views on whether GPs should wear white coats	Number of patients (%) visiting GPs wearing white coats	Number of patients (%) visiting GPs not wearing white coats
1 (not at all important)	389 (36.9)	288 (61.3)
2	72 (6.8)	49 (10.4)
3	155 (14.7)	47 (10.0)
4	170 (16.1)	33 (7.0)
5 (extremely important)	269 (25.5)	53 (11.3)

pathy within the consultation [8]; white coats facilitate identification of authority, mainly in hospital settings [17]; for some patients societal expectations and tradition remain important [1–5, 19].

In studies performed in outpatient clinics conflicting evidence exists about how patients would like their GPs to dress and our findings are only relatively consistent with these observations. The variation in these results probably reflects the differing opinions of patients in different countries, settings and time periods. In a study by Gjerdingen and coll (1987), 292 outpatients attending three family practice clinics in the USA were asked to determine which

Table 3: Patient views on whether GPs should wear white coats according to patient characteristics (n = 1,327).

Characteristics	Crude OR	95%CI	Crude p-value	Adjusted OR*	95%CI	Adjusted p-value*
Sex (female)	0.95	0.77–1.18	0.64	1.11	0.85–1.44	0.45
Age group						
<25	1.0 (ref.)			1.0 (ref.)		
25–65	1.05	0.71–1.56	0.80	1.71	1.02–2.87	0.04
>65	1.31	0.94–1.83	0.11	2.22	1.26–3.92	0.01
Marital status						
Single	0.88	0.69–1.12	0.30	1.12	0.81–1.55	0.49
Married	1.0 (ref.)			1.0 (ref.)		
Divorced or separated	0.94	0.74–1.19	0.58	0.98	0.72–1.32	0.87
Widowed	0.72	0.53–0.99	0.04	0.53	0.36–0.77	0.001
Nationality						
Swiss	1.0 (ref.)			1.0 (ref.)		
Italian	1.99	1.36–2.90	<0.001	2.06	1.36–3.12	0.001
French	1.54	0.82–2.87	0.18	1.47	0.72–2.98	0.29
Portuguese	0.82	0.38–1.73	0.59	0.85	0.38–1.89	0.69
Spanish	0.98	0.40–2.36	0.96	0.78	0.21–2.84	0.70
Other	1.30	0.82–2.07	0.26	1.27	0.74–2.18	0.38
Completed training						
No training	1.23	0.64–2.36	0.54	0.97	0.47–1.98	0.93
Compulsory schooling	0.87	0.56–1.33	0.52	0.89	0.54–1.49	0.67
Apprenticeship	1.0 (ref.)			1.0 (ref.)		
Baccalaureate or diploma from intermediate school	1.01	0.72–1.40	0.97	1.24	0.88–1.75	0.22
University, FIT, UAS	0.67	0.46–0.96	0.03	0.90	0.66–1.22	0.50
Work status						
Student	0.94	0.61–1.45	0.79	1.77	0.92–3.40	0.09
Occupational activity	1.0 (ref.)			1.0 (ref.)		
Retired	1.20	0.96–1.50	0.10	1.15	0.76–1.74	0.52
Recipient of unemployment or invalidity insurance	0.93	0.56–1.56	0.79	1.17	0.70–1.98	0.55
Excellent or very good general health status	1.24	1.01–1.52	0.04	1.23	0.98–1.56	0.08

* Adjusted for all doctor and patient variables listed in tables 3 and 4.
FIT = Federal Institute of Technology; UAS = University of Applied Sciences.

Table 4: Patient views on whether GPs should wear white coats according to GP characteristics (n = 1,327).

Characteristics	Crude OR	95%CI	Crude p-value	Adjusted OR*	95%CI	Adjusted p-value*
Sex (female)	0.67	0.33–1.35	0.26	1.21	0.75–1.96	0.44
Age	0.98	0.94–1.02	0.32	0.93	0.84–1.02	0.11
No certification	1.19	0.32–4.41	0.80	5.33	1.59–17.85	0.01
Urban office (>15000 people)	1.12	0.56–2.24	0.75	0.97	0.58–1.64	0.92
Number of GPs practising in the medical office						
1	1.0 (ref.)			1.0 (ref.)		
2	0.68	0.31–1.48	0.33	0.66	0.41–1.08	0.10
≥3	0.90	0.39–2.09	0.80	0.57	0.30–1.08	0.08
Number of employees in the medical office						
0	0.17	0.09–0.33	<0.001	0.07	0.03–0.18	<0.001
1	1.0 (ref.)			1.0 (ref.)		
2	0.87	0.34–2.28	0.78	0.81	0.52–1.26	0.34
≥3	1.48	0.75–2.93	0.26	1.26	0.66–2.39	0.49
Number of days worked per week	1.90	1.00–3.64	0.05	1.18	0.81–1.71	0.39
Number of working years since certification	0.99	0.95–1.03	0.54	1.07	0.99–1.15	0.08
GP wearing a white coat	3.27	1.23–8.71	0.02	5.67	2.69–11.91	<0.001

* Adjusted for all GP and patient variables listed in tables 3 and 4.

aspects of a GP's appearance produced positive or negative effects [20]. A white coat was considered the third most desirable feature for male GPs, after name tag and short hair, and the first one for female GPs. Another study carried out by Rehman (2005) in a Veteran's Administration primary care clinic showed that among 400 patients, a large majority (76%) preferred GPs to wear professional attire with a white coat rather than surgical scrubs or business dress [10]. Keenum and coll. (2003) showed that traditional items such as name tag, white coat and visible stethoscope were considered as the most desirable attire for both male and female GPs by 496 patients seen in two family practice clinics in the USA [21], whereas according to Menahem and coll (1998), among 168 patients attending three university family medicine clinics in Israel, 52% preferred their GP to wear white coats [22]. Finally, in a more recent survey (2010), Hueston showed that among 423 outpatients consulting three family practice clinics in the USA, only 44% preferred their GPs to wear white coats [23].

Though a large number of surveys addressed this topic in the context of hospital-based outpatient clinics, evidence from GP practices is lacking. Our results compare favourably with a relatively old study carried out by Anvik (1990) [6]. In this survey of 3,739 patients consulting 137 GPs practising in 36 offices in Norway, only 48% of the patients preferred their GP to wear a white coat. In contrast, another survey (1991) carried out among 475 patients attending 30 GPs in five general practices in Scotland showed that patients favoured more formal attire [7].

Our study confirmed that older patients and those visiting GPs wearing white coats were more prone to prefer white coats. These findings are well in accordance with many studies carried out in a variety of settings, and may be explained, respectively, by the fact that older patients are generally more conservative and patients' views may be influenced by the behaviour of their own GPs [6, 7, 10, 20–22]. Contrasting with these findings however Hueston and colleagues found no differences in preference based on patient age and showed that patients' preferences did not seem to be driven by their own GPs' way of dressing [23].

Interestingly, our study showed that Italian patients were more likely to consider white coats to be important. This finding might be explained by the fact that patients from southern European countries are generally more conservative and probably consider the coat a powerful symbol that they associate with professionalism and authority. A study carried out in Italy (2009) in a hospital-based outpatient clinic confirmed strong patient preference for a professional attire [24], whereas the study by Menahem and colleagues suggested that patient origin may be a significant predictor of preference for a white coat [22]. However, Spanish and Portuguese patients had a tendency to judge white coats as being much less important, but as they represented a relatively small subgroup the precision of this finding is small.

The finding that widowed patients were less likely to consider white coats to be important is surprising, but could be interpreted in the same way (role of chance), as they also constitute a relatively small subgroup.

The study showed that patients consulting GPs without staff were less likely to opt for white coats. We see two interpretations for this finding: in clear circumstances (i.e. no employees who may be confused with the GP) there may not be such a high need for a recognisable attire; alternatively, patients seeking care in a practice with several staff may have chosen such a practice because it resembles a small hospital (i.e. in which staff are recognised by the fact that they wear a white coat).

Finally, surprisingly, it appears that patients visiting uncertified GPs expect more formal attire, as if they had to convince themselves of their GP's competence and professionalism.

Limitations

This study was carried out in a single urban region and thus may not be generalisable to more rural areas. Patients who consulted in an emergency situation or who did not speak French were excluded from the study for practical reasons. However, these patients could have other views regarding GPs' white coats, mainly because of lower health or socioeconomic status than that presented by the patients with a scheduled appointment with the GP or those speaking the local language (French). As a matter of fact, the study participants presented a relatively favourable socio-economic status, since they were predominantly Swiss, married, well-trained, working or retired, reporting a relatively good health status and infrequent GP consultation. However, the participation rate was high (>97%) and the patients were enrolled consecutively in randomly selected practices, thus reducing the risk of selection bias. Finally, though the GPs who were included in the study consisted of a random sample of those practising in the Geneva area, only one third of those who were contacted agreed to participate; these might be more concerned with the study question.

Strengths

Thisi s one of the largest studies assessing patient preference for doctors' attire, either in a hospital or an outpatient setting. It is also the first study, to the best of our knowledge, to recently address this question among GPs. In addition, the recruitment of GPs and patients was carried out at random, and although selection bias cannot be completely excluded (participation rate only 30% among the GPs), the very high participation rate among the patients (>97%) adds to the validity of these findings.

In conclusion, these results suggest that white coats are no longer considered a powerful symbol for a vast majority of patients visiting GPs. However, GPs may wish to adjust their attire to meet the expectations of their more conservative patients in order to favourably influence trust, confidence and patient-doctor relationship, which could lead to better adherence and *in fine* better health outcomes. Further studies should be carried out in other parts of Europe and more globally, to assess the generalisability of these findings in a variety of primary care settings.

Acknowledgements: We would like to warmly thank all the GPs and the patients who agreed to participate in this study, and Florence Siltz, our research assistant, who was responsible for the organisational aspects of the project.

Funding / potential competing interests: This project was jointly funded by the Swiss Medical Association (FMH) and the Swiss Academy of Medical Sciences (ASSM). No other potential conflict of interest relevant to this article was reported.

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