

PICA IN A LEARNING DISABILITY HOSPITAL: A CLINICAL SURVEY

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Introduction

The word Pica was derived from the Latin name for a magpie (Pica), a bird known to steal objects that are not commonly regarded as food. From a developmental perspective Pica can be defined as "the desire to ingest or the ingestion of substances usually considered inedible, continuing beyond the normal developmental phase of occasional indiscriminate and experimental mouthing and swallowing (Bicknell, 1975)". The tenth edition of International Classification of Diseases describes Pica (F98.3) as "persistent eating of non-nutritive substances occurring as one of many symptoms that are part of a more widespread psychiatric disorder or occurring as a relatively isolated psychopathological behaviour (W.H.O. 1992)".

Pica, as a symptom, is often an intractable problem in those with a learning disability. There is some evidence to suggest that it is more common in those with a severe rather than in those with a mild learning disability (McAlpine and Singh, 1986; McClelland *et al.*, 1992). Objects ingested range from pieces of paper, fluff from carpets and other large objects to faeces. The consequences of Pica also range from minor halitosis and gastro-intestinal upset to life threatening condition such as intestinal obstruction (McLoughlin, 1987; O'Brien and Whitehouse, 1990; Anderson *et al.*, 1991), and death (McLoughlin, 1988).

This study was undertaken as there are no recent reported studies on prevalence of Pica in adults with learning disability living in a hospital.

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Method

The aim of the project was to look at the characteristics and clinical management of residents with Pica in a large learning disability hospital. Senior nursing staff of the hospital wards were asked to identify those residents who, in their observation, were in the habit of eating non-food substances. For the purpose of the study residents who ate ice-cold frozen food items from the deep freeze, rubbish bins and/or discarded food (on the floor) were also included. This extended definition of Pica was used as the authors felt that with a narrow definition of Pica many people with problem eating behaviours would be excluded from study. Later, the key worker of the patient was interviewed to collect further details of Pica. The case notes were studied to collect relevant medical information. The protocol used by Bicknell (1975) in her study of children with Pica was used with few modifications.

The authors attempted to find a single numerical score to represent the severity of Pica, and Pica scores (Pica percentage score) were calculated as follows; the sum of frequency, resistance and degree of compulsion scores was obtained. A total of 15 was taken as the maximum possible or 100% Pica score, and relevant percentage score for each resident was calculated.

The personality profile format used by Bicknell (1975) in her study of children with Pica was used to assess the personality features of these residents as no other scale was found to be suitable to study this particular group of people.

The key worker scored the items. As no control subjects were studied in this project, "deviant scores" as obtained by Bicknell (1975) after comparison with the non-pica children, were not calculated. Instead, the scores were taken to represent the personality profile of the individual subject.

The variables were studied using cross-tabulation procedure and where relevant Mann-Whitney U non-parametric statistical test was used to compare the independent variables such as gender, type of ward etc. scatter graphs were used to examine the relationship between age/Pica score, duration of stay in the hospital/Pica score and number of hours outside the ward/Pica score. In addition, Spearman rank order correlation procedure was used to study the correlation between selected variables.

The personality profiles were obtained by calculating the percentage score for each variable and results were plotted in a polar dimension chart, and the maximum number of residents in each personality variable was taken to represent the group profile of residents who had Pica.

Results

Resident characteristics:

Of a total hospital population of 246 residents (144 male, 102 female), 25 (10.1%) residents were found to have Pica, and the male to female ratio was 1.4:1. Four of the 25 residents had moderate and 21 had severe learning disability. The ages ranged from 24 to 79

years with a mean age of 40.7 years (SD 13.47). The average number of years of stay in the hospital was 29 years (maximum 54 years, minimum 2 years, SD 12.75).

There was no group differences between male and female residents in the following characteristics viz. age, duration of stay in hospital, number of hours outside the ward, percentage score of Pica and in any of the ten personality variables studied.

The average number of structured (planned day care) hours that these residents had outside the ward was 14 hours per week (maximum 51, minimum 2, SD 10.97). Most nurses were anxious about the Pica and only 3 nurses stated that the Pica was of such a nature as not to provoke concern. In only 4 of the case notes a record of onset of Pica was found. In all four the onset was in early childhood. In another 4 residents there was a formal assessment and in only 2 case notes a management plan was outlined.

All the subjects had their haemoglobin concentrations assessed at least once and the results were properly recorded in the notes, and none had anaemia. No other trace element concentrations were investigated in any of the subjects.

Pica behaviour and objects

There was no record of onset, variation, particular seasonal association or periodicity of Pica in the case notes and the key workers were not able to recall precise details about these items in the

questionnaire. The item "frequently sucked/mouthed" did not elicit many responses.

Of the 25 residents, 10 residents had Pica for cigarette butts and 3 residents used cigarette butts or cigarettes as their exclusive Pica objects. One of them had an "obsession" for cigarettes, constantly demanding them from the staff and because of this was banned from smoking. Six were noted to use faeces as a Pica object. Two residents drank toiletry preparations, especially those containing alcohol e.g. after shave lotion and eau-de-cologne. All these residents also had generalized Pica (indiscriminate Pica). Five residents were only interested in eating food dropped on the floor, from rubbish bins or frozen food from the deep freezer.

Spearman Rank order correlation statistical procedure was used to study the correlation between percentage Pica score and other variables such as age, duration of stay in years, number of hours outside the ward, number of patients per nurse and personality variables. Except for age ($p = 0.05$), disobedience-passivity (P4, $p = 0.03$), irritability-affability (P9, $p = 0.006$) and obstinacy-amenability (P10, $p = 0.03$) no other variables had any significant group correlation with the percentage Pica scores.

Type of Ward

The "old" wards of this hospital can be described as houses with a number of large dormitories and a single central lounge for day activities, constructed

during the third and fourth decades of this century. All these large "blocks" are on either side of a road within the older part of the hospital. In line with the current policy of closure of long stay hospitals these "wards" are being run down gradually adding to the sombre appearance of the buildings. In contrast, the "new" homes or cottages were built during the early nineties, distributed around a cul-de-sac and having single or double bed rooms.

Type of wards were compared (Mann-Whitney U test; independent variables, old and new wards) for group differences in the client characteristics. There was no statistical difference in the following variables: sex, age, number of years as inpatient in the hospital and percentage Pica score. The significant difference in the personality variables were in P2 ($p = 0.001$) noisy-quiet and P4 ($p = 0.04$) disobedience-passivity dimensions (TABLE I).

TABLE I
Pica in a Learning Disability Hospital - A Clinical Audit
Personality Profile

Characteristics			1	2	3	4	Characteristics
			(total n = 25)				
P1	Aggressive	N	3	9	1	12	Submissive
		%	12	36	4	48	
P2	Noisy	N	7	5	9	4	Quiet
		%	28	20	36	16	
P3	Attention seeking	N	5	7	7	6	Isolated
		%	20	28	28	24	
P4	Disobedience	N	2	9	7	7	Passivity
		%	8	36	28	28	
P5	Overactive	N	6	9	8	2	Apathy
		%	24	36	32	8	
P6	Destructive	N	4	7	3	11	Not destructive
		%	16	28	12	44	
P7	Rigidity	N	5	2	7	11	Adaptability
		%	20	8	28	44	
P8	Independence	N	9	2	8	6	Timidity
		%	36	8	32	24	
P9	Irritability	N	6	9	6	4	Affability
		%	24	36	24	16	
P10	Obstinacy	N	5	6	12	2	Amenability
		%	20	24	48	8	

When the Pica percentage score was plotted (frequency scatter plot, with fitted function) against nursing staff ratio (i.e. number of patients per nurse) the scatter diagram showed that there was no apparent effect of low nursing ratio against the Pica score and the linear fitted function remained between 60% to 65% of Pica score.

Personality characteristics

Personality profile (percentages in a polar dimension chart) suggests that Pica patients scored more on "submissive", "not destructive" and "adaptability" characteristics and the scores on other variables were scattered (TABLE I). In particular, they were not aggressive or violent but scored mostly towards the opposite polar dimension.

Discussion

This study was conducted in a hospital and, therefore, may not represent the true extent of the problem in the community. Also, the particular hospital residents population was highly selected and therefore biased as a result of rehabilitation of many of the residents to the community. Thus the rate of Pica in this population may be higher than expected as there is evidence to suggest that the residual population in a learning disability hospital has higher levels of morbidity and dependency needs (Framer *et al.*, 1990; Jawed *et al.*, 1993a; Krishnan *et al.*, 1993; Khan *et al.*, 1993).

One of the problems encountered in this study was related to the definition of Pica itself. The definition or description was related, indirectly, to the evaluation of the Pica behaviour by the nursing staff as they reported on residents who in their observation were noted to be either a management problem or that in some residents the Pica behaviour caused some concern. A refined definition which included "mouthing of objects" would probably have yielded a higher percentage of Pica incidence. Pica for cigarette butts may reflect dependence on nicotine. Eating of uncooked frozen foods has recently been reported in the literature (O'Brien and Whitehouse, 1990), although it is doubtful whether this particular behaviour could be part of an eating disorder and could be, using a strict criteria, considered as Pica.

The item "frequently sucked/mouthed" did not elicit many responses and it is possible that this aspect of Pica is more common in children. As mentioned in the methodology section most of the items in our study were taken from Bicknell (1975) who studied children with Pica and this behaviour is probably more relevant to this age group. It is also possible that adults with Pica may show developmentally advanced behaviours, e.g. swallowing.

In our study a "Pica percentage score" was calculated to obtain a single score to represent Pica. This may have flattened out the outliers, or extreme behaviours, and the homogeneous score may not reflect within group variation or extremes of Pica in this population. In

view of the small sample further statistical analysis was not attempted.

The method of obtaining a comprehensive score of Pica, by calculating the percentage Pica score did not take into consideration the effect of Pica on the overall health of the resident. To some extent this underlying risk possibly has more effect on the scoring or evaluation of a resident's Pica behaviour than a simple concept of eating disorder. Therefore, an additional item to represent the dangerousness of the Pica could enhance the intrinsic weight of the Pica score. Another method of recording the severity of Pica is to record the number of serious or potentially serious medical complications that a resident has because of Pica. It is also possible that "frequency" of Pica may be more valid than resistance or compulsion and that these two components of Pica may have been scored interchangeably. Another problem in attempting to study the correlations or comparison of group differences is that the weight of individual Pica behaviour was not taken into consideration in such procedures; for example Pica for cigarette butt was given the same weight as Pica for faeces which has more adverse consequences on the health of the resident. Also, frequent Pica for a relatively harmless object gets a higher score than an infrequent Pica with potentially higher risk to health.

Another methodological short coming was that the instruments were scored by the key worker of the resident. Although this acknowledges the fact that the key workers may have a good understanding of their residents it

was not possible to assess the "reliability" of scores. This is a common problem in studies in people with learning disability where the key worker in most instances is the only person who has in-depth knowledge of the client's behaviour under his/her care. The instruments used in this study were not tested for validity or reliability as the description of the variables was more in the nature of a clinical checklist than a research instrument with inclusion or exclusion criteria. During the study the staff felt that their participation in the project enhanced their appreciation of the problem and encouraged them to take a positive attitude, and plan for an intervention programme. The personality variables such as aggressiveness, disobedience and irritability may have been scored as management problems as they are more noticeable than other aspects of personality such as affability, adaptability and timidity.

Habitual behaviours

From a clinical point of view it was noted that the residents' Pica could be grouped into categories such as selective Pica, indiscriminate Pica and possible dependence pica (e.g. cigarette butts). Also, the overlap of such categories of Pica in most residents was not a noteworthy feature. However, as the total number of residents studied in this project was only 25, further studies are required to confirm this aspect of Pica in larger groups of people with learning disability.

The observed prevalence of 10.1% Pica in adults is similar to that of 9.2% prevalence reported by McAlpine and Singh (1986) but is lower than that of 25.8% reported by Danford and Huber (1982). The observed preponderance of younger residents could be due to Pica causing high morbidity, and mortality, in people with severe to moderate learning disability and the associated mortality leading to the observed reduction in the incidence of Pica in residents above the age range of fifth decade.

Associated clinical conditions

It was not possible to collect information about the clinical/psychiatric diagnosis in these residents as details related to early and late childhood disorders were not adequately documented in the hospital notes. Therefore, related conditions such as autistic disorder (Kinnell, 1985), phenylketonuria (Coleman, 1990; Hoskin *et al.*, 1992) and temporal lobe epilepsy (Elia *et al.*, 1990; Coleman, 1990), that are implicated in the genesis and maintenance of Pica, and their relationship to the personality variables studied could not be properly investigated. The personality profile (TABLE I) of the 25 residents studied suggests that further work is required to study the relationship between Pica and personality variables rather than associating a simplistic relationship of Pica to autistic disorder as a group, or to autistic symptoms in isolation.

It is possible to assume that smoking cigarettes by members of staff can have

a "modelling" effect on some vulnerable residents and once initiated into the practice further dependence on nicotine could lead to "cigarette/butt seeking" behaviour and this could also form part of a wider searching/Pica repertoire.

This study also highlights the lack of structured activities for the residents outside the ward. Boredom can be an important precipitant and a maintaining factor in the development of Pica. Also, the provision of separate rooms for personal use may have encouraged those with autistic tendency to withdraw and indulge in Pica in the absence of any meaningful activity.

There is evidence that lead intoxication may be a consequence of Pica and that this may lead to further brain damage thus re-enforcing the Pica (Bicknell *et al.*, 1968). Iron, calcium and zinc deficiency have been found by various authors in people who show Pica behaviour (Danford *et al.*, 1982). There were no serum trace element reports in the case notes of any of the patients and none had serum lead estimations in this study. Therefore, it was not possible to study the relationship of trace element deficits and Pica in these residents.

It is possible that in some residents hunger may have initiated Pica. In an institutional setting mid-morning or late afternoon snack breaks could be difficult to organise. This problem may be overcome with better staff-resident ratios. The finding that high staff ratios had no appreciable effect on Pica scores suggests that engagement in meaningful activity may be a more significant factor than the staff ratio.

Conclusion

This is the first study of pica in adults who are longstay residents in a learning disability hospital, and the findings reported reflect problems in clinical assessment and nursing management. Despite several methodological shortcomings it was possible to highlight service deficits and propose an action plan as given in Appendix A. This survey will be repeated after a duration of two years as part of an ongoing clinical audit programme.

Summary

A survey of Pica was conducted in a hospital for people with learning disabilities. Of a total hospital population of 246 residents with learning disabilities 25 (10.1%) were found to have Pica, and the male to female ratio was 1.4:1. Four residents had moderate and 21 had severe learning disabilities. The average age was 40.7 years (min. 24, max. 79, SD 13.75), mean duration of inpatient stay was 29 years (min. 2, max. 54, SD 12.75). The mean number of hours of structured day activity outside the ward was only 14 hours (min. 2, max. 51, SD 10.97) per week. Despite the severity of Pica only 4 had a full assessment and only 2 had behavioural management programmes. The personality profiles suggested that these residents were not aggressive nor destructive but had withdrawn, amenable and submissive characteristics.

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Appendix A

Survey Recommendations

A) Assessment/Management Plans

In Pica patients an attempt must be made

1. to make an assessment of the behaviour and,
2. to formulate a management plan and,
3. the plan must be recorded in medical and nursing notes.

B) Investigations

1. Pica patients must have a regular check on haemoglobin levels and if anaemia is detected appropriate plan of action must be formulated as there is some evidence that correction of anaemia may have a beneficial effect on reducing the frequency of Pica (Arbiter and Black, 1991). Also, Pica can lead to chronic, intermittent loss of blood (Rector, 1989).
2. Serum lead levels must be estimated in those who have unexplained anaemia or basophilic stippling of the red blood cells (Lishman, 1987). There is evidence to show that lead poisoning can be caused by Pica and this may cause further brain damage (Bicknell *et al.*, 1968).

3. Serum trace element estimation, especially for zinc, calcium and magnesium should be conducted. There is evidence that correction of these deficits in some patients can lead to lessening of Pica (Danford *et al.*, 1982; Lofts *et al.*, 1990).

C) Behavioural/ward management

1. As far as possible the staff must ensure that Pica patients are fully occupied during the day as boredom can aggravate Pica. Also, the observed low levels of structured day activity must be addressed and suitable alternate activities must be planned.
2. The patient should have access to mid-morning tea and biscuits, if appropriate.
3. Those patients who have Pica for cigarette stubs must be reassessed and if found suitable could be treated on a reducing dose of nicotine substitutes (nicorette patches).
4. Also, measures to discourage smoking by staff within the ward and in particular within sight of Pica patients must be considered.

D) Pharmacological management

1. For those Pica patients where nursing management is considered to be a major problem a trial of an anti-depressant drug (Jawed *et al.*, 1993b) and in particular the novel drugs such as serotonin re-uptake inhibitors (SSRI) may be tried as these drugs are thought to have a specific effect on eating disorders.

E) Specialist nurse service

1. As Pica is a major health problem in people with learning disabilities, nursing specialisation in this area of management must be encouraged. This has implications for detailed assessment of Pica behaviour, follow-up arrangements for both behavioural and pharmacological therapies, and above all for a specialist nurse service for those living in the community. This nurse could form part of challenging behaviour and psychiatric services.

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