

Prospective Evaluation of the Referral Pattern to Restorative Dentistry Consultation Clinics in Ireland

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Abstract - The objective of this study was to analyse pattern of referral to Restorative Dentistry Consultation Clinics in a Dental Teaching Hospital. Patient demographic details and referral information were collected on new patient clinics. The majority of patients were female (62.1%). The greatest proportion of patients, 41.6%, was referred from the adjacent urban area. The highest percentage of referrals was from general practitioners, (37.6%). The main referral reasons were periodontal (24.7%), fixed prosthodontics (18.6%), endodontics (10.7%) and removable prosthodontics (8.3%). The study clearly showed that the majority of patients referred were female and from close proximity to the Hospital. Patients were referred for a broad range of restorative reasons.

KEY WORDS: Dental Health Services, Restorative Dentistry

INTRODUCTION

Restorative Dentistry is a broad discipline encompassing operative dentistry, endodontics, periodontology, fixed and removable prosthodontics and implantology. As increasing numbers of adults retain teeth into old age, it is anticipated that increased need and demand for restorative dental services in secondary care centres¹. Patients may be referred for consultation for a variety of reasons including; a specific interest of the referring practitioner, a lack of confidence by the referring practitioner, financial constraints, interpersonal challenges, treatment planning and advice, provision of complex treatment, retreatments, increasing patient expectations, and patient request for a second opinion or medico-legal opinion.

In the Republic of Ireland eleven of the twelve consultants in Restorative Dentistry are employed in the two dental teaching hospitals, which are located in the main urban centres of Cork and Dublin. This is broadly similar to the UK where 90% of consultants in Restorative Dentistry work in dental teaching hospitals². In Northern Ireland there are eight consultants in Restorative Dentistry with a consultant to population ratio of 1:213787 compared to a ratio of 1:338520 in the Republic of Ireland.

The literature on restorative referrals is sparse with some reports of referrals for Prosthetic Dentistry³⁻⁵, Conservative Dentistry⁶, tooth wear⁷ and Restorative Dentistry¹⁻², all of these studies were carried out in the United Kingdom and there is little information on referral patterns in the rest of Europe.

In Ireland although there are currently no specialist lists for the specialities of Restorative Dentistry, there are practitioners who have had postgraduate training in the restorative monospecialities and their practices are limited to one of these monospecialities.

Unlike the UK, the Restorative Dentistry service in the University Dental School and Hospital, Cork is managed by four academic consultants in Restorative Dentistry. They do not have an exclusive service remit, and are also responsible for teaching, research and administration.

The system for funding primary oral healthcare for those on reduced incomes is managed by the community service. As noted already consultants in Restorative Dentistry are based in academia and there is no clear data on the need for or utilisation of a consultant service in Restorative Dentistry in Ireland. As a consequence neither the fundholders nor the consultants have any structured information on patient referral patterns.

Accordingly, the aim of the study is to determine the factors influencing referral of patients to Cork Dental School and Hospital for specialist restorative dental services. Due to the geographical proximity Ireland to the United Kingdom, it was hypothesised that referral pattern and patient profile referral to the Restorative Department, University Dental School and Hospital Cork would be similar to Restorative Dentistry consultants in the United Kingdom.

METHOD

A prospective record of referrals to the new patient clinics in Restorative Dentistry was carried out. Information on patient age, gender, residence, referral source, and reason for referral were recorded on a standard proforma. The data was entered on the proforma contemporaneously during or immediately after the Consultation Clinic. Patient age was calculated on the date that they were seen on the Consultant Clinic. Residence was categorised as living

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within the city or within ten miles of the Dental Hospital, the rest of the county of, other contiguous counties or non-contiguous ("distant") counties.

Referral source was either from self-referrals, secondary level referrals from general dental practitioners and the community service, tertiary level referrals from within the Dental Hospital, medical or miscellaneous sources. Tertiary referral from medical sources included those from the adjacent regional hospital, consultants, general practitioners or allied health professionals such as speech therapists or physiotherapists. Miscellaneous referrals came from the armed services, prison service and other dental schools. Self-referrals contacted Restorative Dentistry directly or came through the primary care screening clinic in the Dental Hospital.

Dental Hospital referrals included those from Casualty, Oral Surgery, Oral Medicine, Restorative Dentistry and Paedodontics. Unlike the United Kingdom self-referred patients and those referred by their general dental practitioners paid a consultation fee.

The information was collected at their first attendance for consecutive patients referred over a two-year period. The reason for referral was determined from the referral letter. If the reason for referral was unclear from the information provided, it was elucidated at consultation.

As the variables measured were categorical in nature Chi-square tests were used to examine associations between specified variables. For significant associations obtained pairwise comparisons were conducted applying a Bonferroni adjustment to further explore the significant associations determined initially. Significance was accepted at the 5% level.

RESULTS

Over twenty-four months, there were 1057 referrals. Six hundred and fifty six (62.1%) of the patients were female. The mean age of the patients was 40.5 (s.d. 16.9) years. For females the mean age was 41.3 (s.d. 16.9) years and for males the mean age was 39.3 (s.d. 16.9) years. For

each age cohort, more females were referred than males (Figure 1).

The immediate hinterland of the hospital accounted for 41.6% of the referrals, 36.9% of the referrals were from the surrounding county with 19.0% of referrals coming from adjacent counties and 2.5% of referrals from distant counties. The referrals as a percentage of the total population in specified areas are shown in Table 1. The number and proportion of referrals from specific sources in Table 2 and the reasons for referral are listed in Table 3.

Statistically significant associations were found between; the reason for referral and referral source, patient gender and age, the referral source and patient location, the reason for referral and the patient location, the referral reason and patient age.

DISCUSSION

A particular challenge of this type of study is the categorisation of referral reasons from the clinical letter and notes. There were very few referrals for specific opinions on aesthetic issues, but some patients raised aesthetic concerns during consultations. This data considered in the analysis deals with the primary reason for referral.

The majority, 62.1%, of referrals were female; this is consistent with to referral patterns in the UK^{1, 2, 4, 6, 8}. A significant association was found between patient gender and age of referred patients, $p < 0.05$ ($\chi^2 = 12.957$, $df = 6$). A greater percentage of males in the younger age groups were referred while a greater proportion of the referred females were older, especially in the 40-59 age cohort.

The greatest percentage of patients, 41.6%, was referred from the area immediately adjacent to the dental hospital. The hospital is located in the area of greatest population in the region and has the greatest number of dentists. The further those patients live from the dental hospital the less likely they are to have been referred. This is similar to the referral pattern in the UK^{1, 4, 6, 8-10}. Not only was there a direct relationship between proximity to the hospital and number of referrals but the percentage of the population

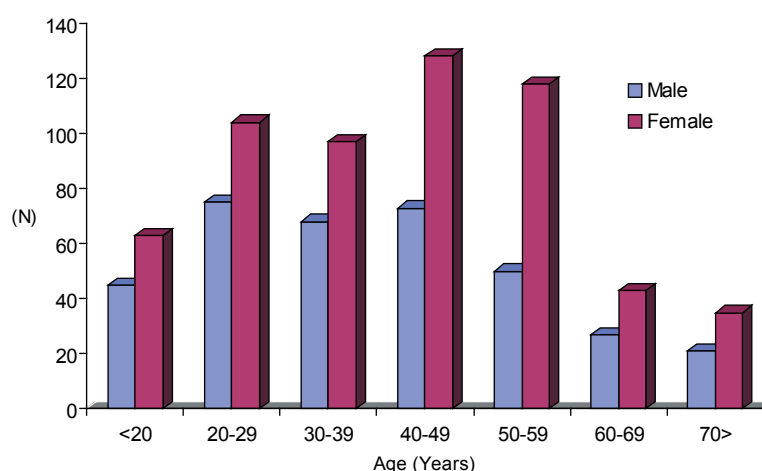


Figure 1. Gender and Age of Referred Patients (N)

Table 1. *Referrals as a Percentage of Population*

<i>Residence</i>	<i>Population¹¹</i>	<i>Referrals</i>	<i>%</i>
Cork City	123062	440	0.357
Cork County	324767	390	0.120
Contiguous Counties	549508	201	0.004
Kerry	132527	63	0.005
Limerick	175304	33	0.002
Tipperary	140131	47	0.003
Waterford	101546	58	0.006
Distant Counties	372070	26	0.001
Clare	103277	15	0.001
Kilkenny	80339	3	>0.001
Westmeath	71858	1	>0.001
Wexford	116596	7	0.001

Table 2. *Source of referrals*

<i>Source</i>	<i>Number</i>	<i>%</i>
General Dental Practitioner	398	37.6
Self Referral	261	24.7
Community Service	144	13.6
Dental Hospital	144	13.6
Orthodontics	53	5.0
Miscellaneous	39	3.7
Medical	18	1.7

Table 3. *Reason for referral*

<i>Clinical Reason</i>	<i>Number</i>	<i>%</i>
Periodontology	261	24.7
Fixed Prosthodontics	197	18.6
Endodontic	113	10.7
Removable Protheses	88	8.3
Toothwear	69	6.5
Operative	61	5.8
Unknown	55	5.2
Implant	43	4.1
Medical	42	4.0
Developmental	38	3.6
Review	31	2.9
Miscellaneous	19	1.8
Pain	17	1.6
TMJ	14	1.3
Aesthetics	6	0.5
Prognosis	3	0.3

living in a specified area being referred also bore a direct relationship with proximity to the hospital as is shown in Table 1.

While for all areas general dental practitioners accounted for the greatest source of referrals a significant association was found between referral source and patient location, $p < 0.001$ ($\chi^2 = 97.803$, $df = 18$). Of the patients from the immediate vicinity to the Dental Hospital, 28.0% were self-referred compared to 19.9% of referrals from the immediate hinterland and 11.1% from more distant areas.

Conversely referrals from the community service accounted for 29.7% of referrals from adjacent counties compared to 7.5% of referrals from the immediate hinterland of the Dental Hospital.

While general dental practitioners represented the greatest source of referrals, 37.6%, this is considerably lower than in the UK where the referral rate ranged from 74%⁴ to 89%^{1,8}. Reasons for this are unclear, but may reflect lack of awareness of the service, or, ambivalence toward it. Further work will be required to determine the attitude of

Irish general dental practitioners to the development of hospital based consultant services in Restorative Dentistry. It is possible that patients in some areas of Ireland are not able to access secondary restorative dental care. From a planning perspective, development of an outreach service may be needed to serve these communities.

Conversely referrals from the community service were higher, at 13.6%, than in the UK where the referral rate varied from 0.0%² to 3.5%⁶. In Ireland adults on limited income come under the remit of the community service and these accounted for a substantial proportion of patients referred from that source.

Cases of clinical hypodontia, soft tissue and space management accounted for the majority of referrals from Orthodontic clinics. This in agreement with Basker *et al* who reported that many of their consultant referrals were orthodontic in nature, other orthodontic referral rates have varied from 1.0%¹ to 5.1%⁸.

A significant association was found between patient location and reason for referral, $p < 0.005$ ($\chi^2 = 49.727$, $df = 27$). This was particularly evident between Cork county and the contiguous counties, a significantly greater percentage of patients were referred from adjacent counties for periodontal reasons, 35.9%, compared to Cork county, 21.6%.

There was a significant association between the reason for referral and the source of that referral, $p < 0.001$ ($\chi^2 = 417.644$, $df = 54$). The greatest percentage of referrals from community dentists (45.2%) and general dental practitioners (28.8%) were for periodontal reasons whereas the greatest percentage of self-referrals (26.6%) and from orthodontics (23.6%) was for provision of fixed prosthodontics. As the financial cost of care provided in the Dental Hospital by undergraduates is less than in general practice, this may account for the self-referrals for fixed prostheses. This might also account for the limited number of referrals for purely aesthetic reasons.

A significant association was demonstrated between reason for referral and patient age, $p < 0.001$ ($\chi^2 = 242.026$, $df = 54$). Referrals for periodontal assessment accounted for 34.6% of referrals in the 40-49 age cohort compared to 4.1% of referrals for those ages over 70 years. Conversely 36.8% of referrals for those aged over 70 years were for removable prostheses compared to 6.7% of referrals for those in the 40-49 age group. In the 60-69 year-old age group 42.0% of referrals were for periodontal, endodontic or fixed prosthodontic reasons. This young elderly cohort appears to have a different profile of clinical referral than older patients and this would have implications for planning of care and resources.

CONCLUSIONS

It appears that access to specialist restorative care may be limited. Patients who live close to the hospital are more likely to be referred, they were more likely to be female, the main referral source was general dental practitioners. Patients were referred for a broad range of reasons, and there was a relationship between patient age and reason for referral.

Patterns of patient referral to a Restorative Dentistry consultation clinic in Ireland were broadly similar to the United Kingdom, however the community service played a greater role in Ireland.

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